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PACIFIC PULP & PAPER INDUSTRY

Volume 5
Number 13

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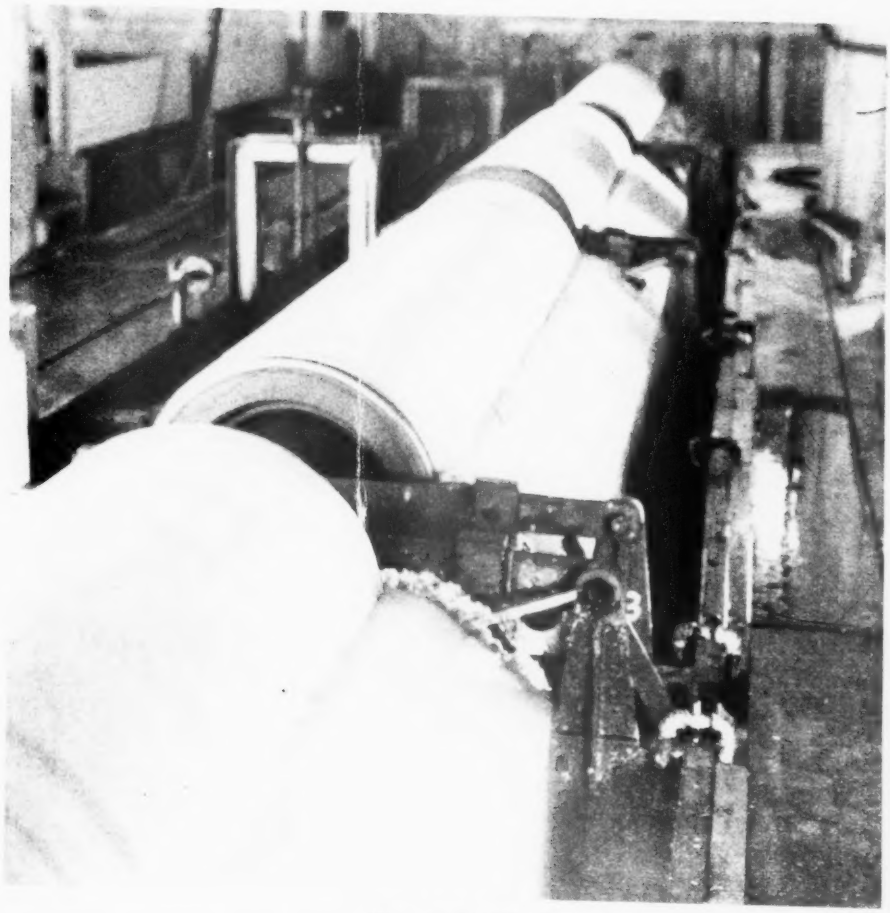

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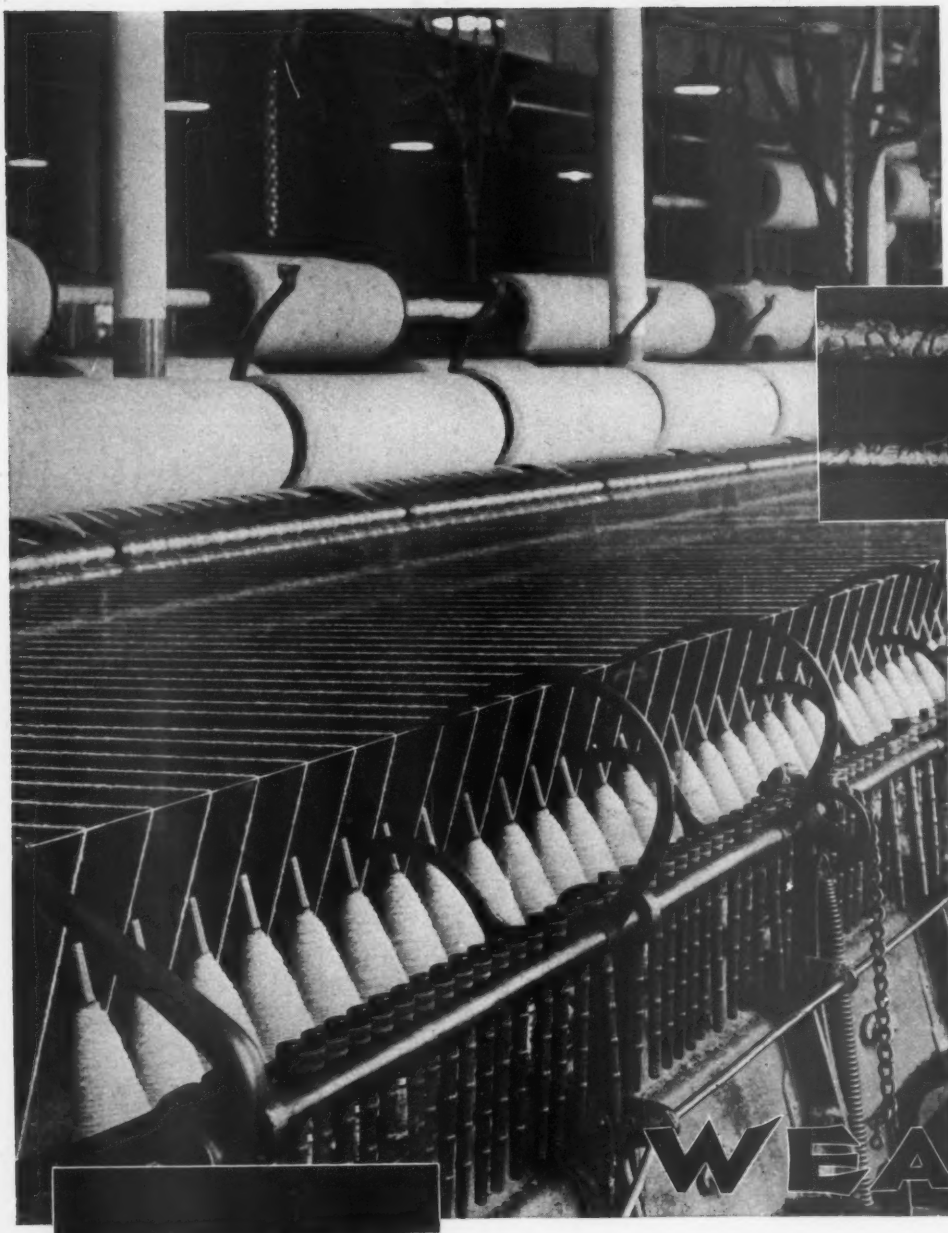

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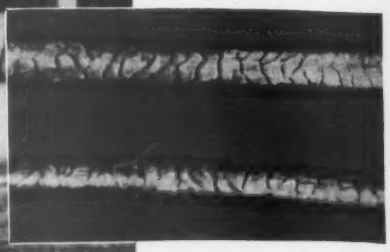

This shows the "armor plated" fibre of strong, healthy wool. Nature's method of building wear-resistance is enhanced by Kenwood Tanning Processes.

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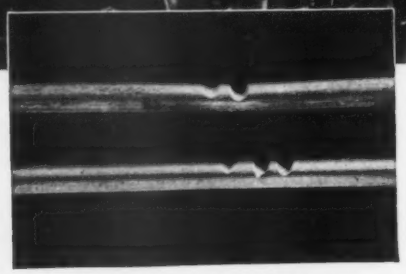

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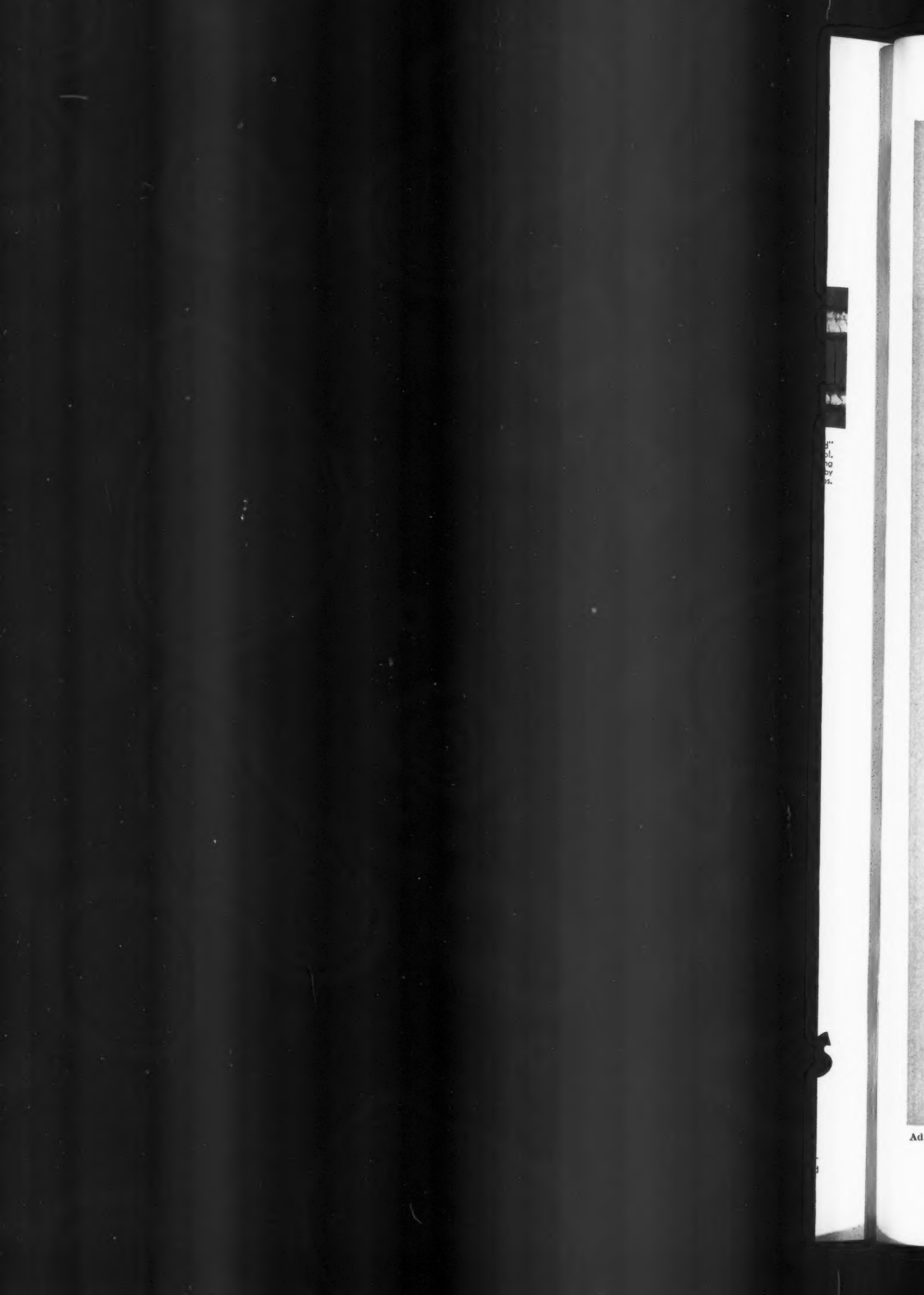

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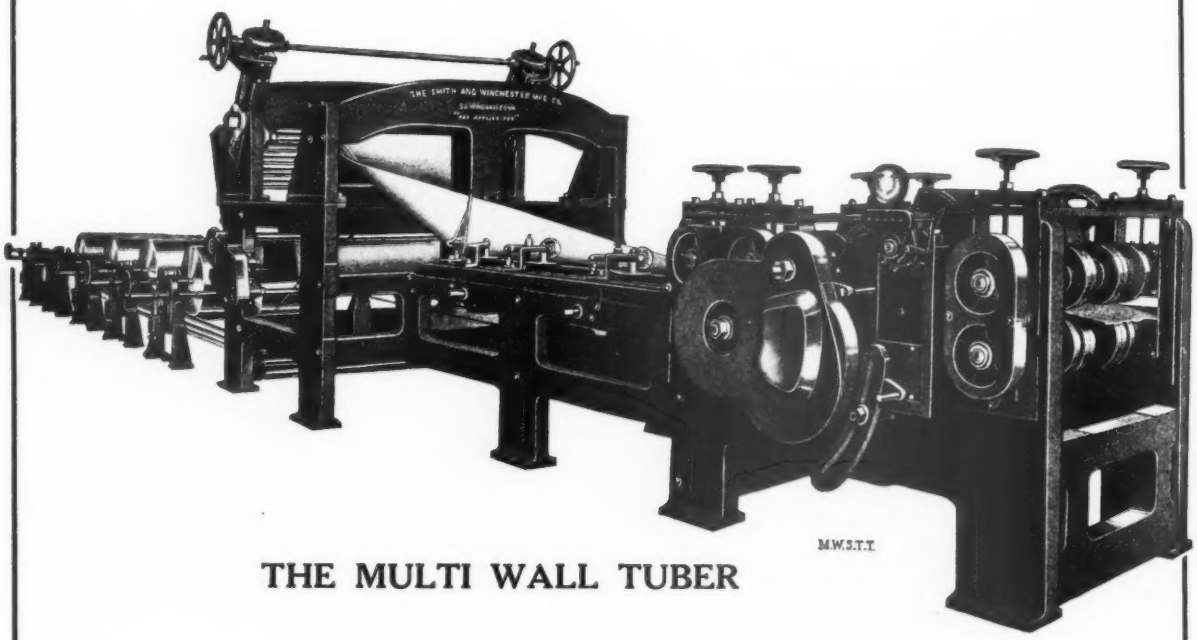

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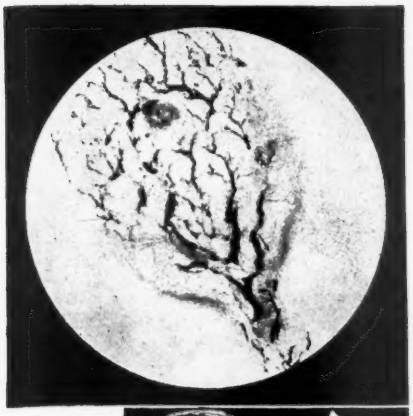

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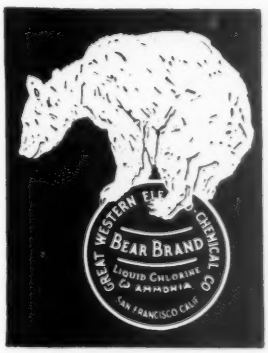

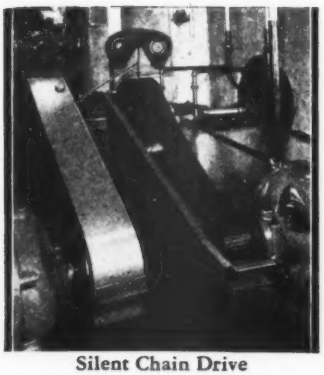
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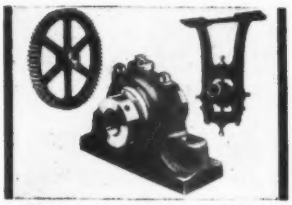
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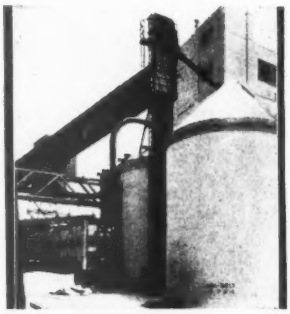
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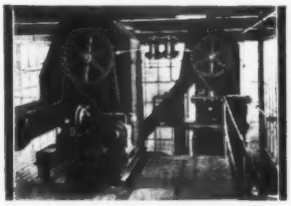
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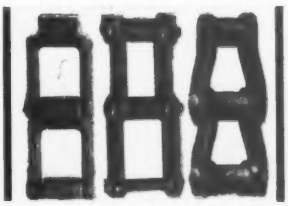
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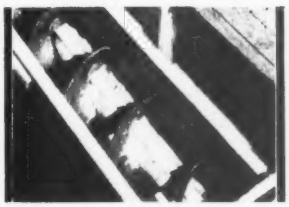
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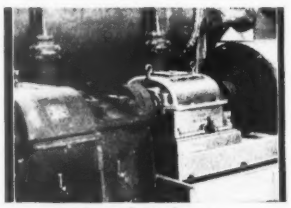
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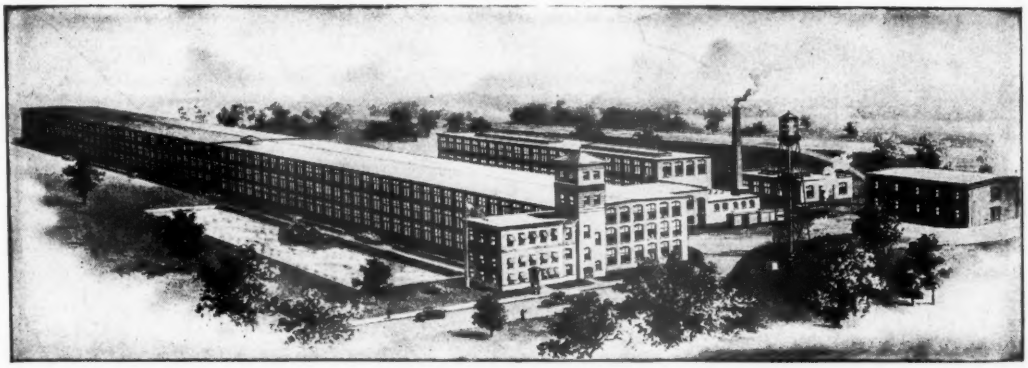

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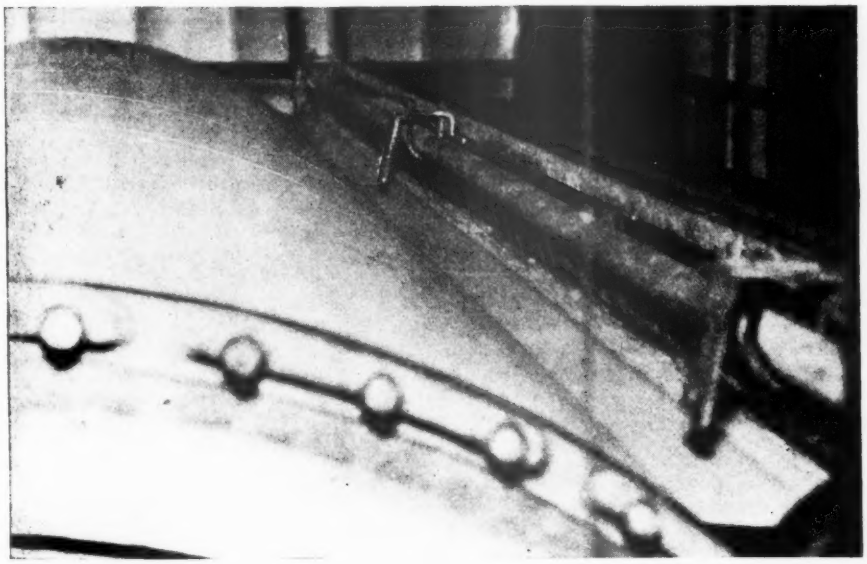

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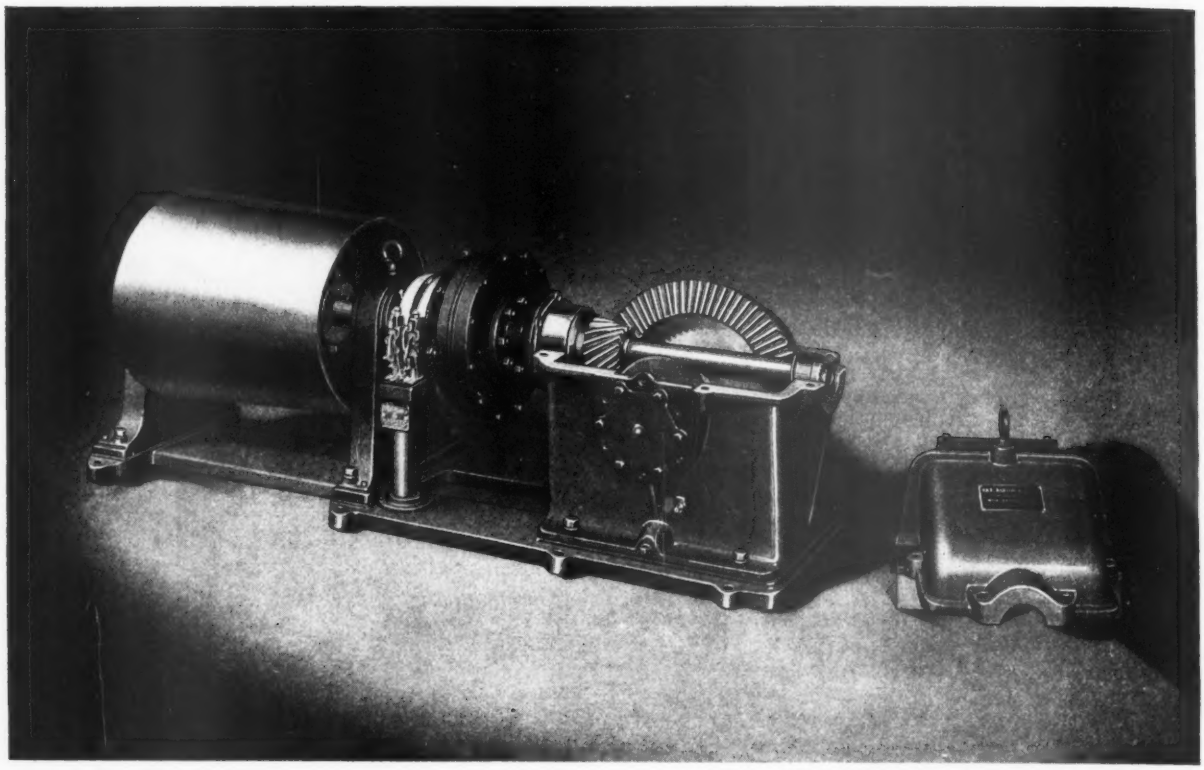

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AS 1931 TAKES LEAVE

THE pulp manufacturer does not lie upon a bed of roses as 1931 makes ready to close its records. Any word other than "chaotic" is scarcely appropriate to describe the chemical pulp market at the present time. On what may be the outlook for the future, opinions vary greatly, but generally there is no great surplus of optimism. More likely the pulp manufacturer tends to point to the excess capacity hanging over the market as the most significant omen portending a considerable delay before production and consumption of pulp are in apparent harmony.

A review of the toboggan slide of pulp prices in the twenty-four-month period just ended shows bleached sulphite to have dropped off from about $70-$75 per ton at the opening of 1930 to $40-$45 at the close of 1931. The quotations are taken from sales of foreign pulp, average grades, ex-dock New York. In the same period strong unbleached sulphite fell from $54-$56 to $34-$36. Kraft pulp took it on the nose before its sulphite brothers, going from $48-$50 at the opening of 1930 to $32-$35 at the end of the same year, and then, after a dip below the $30 level in June it settled down with fair steadiness at $30 and has remained at that point to date.

The prices are, of course, averages and it is possible to develop isolated cases of prices even lower than these, but the figures set forth in the preceding paragraph are sufficient to point the trend.

Who has absorbed this loss? The great bulk of it has come out of the pockets of the pulp manufacturer. He has been able to hand on some of the bad news to the pulpwood cutter and thus fill his wood yard at lower cost; he has been able to convince the manufacturers of equipment and supplies to a moderate extent that there ought to be some reductions; he has in most cases taken a little percentage out of his employes' pay envelopes; but he hasn't been able to make the bankers bat an eye or the tax collector to thaw a particle. He has assembled his wits, fought with, threatened, implored, and cajoled his engineers and mill men into reducing the cost of manufacturing—with very material results—but Old Man Overhead (alias Fixed Charges) has been deaf to every form of persuasion or entreaty.

The lot of the pulp manufacturer is quite different from that of the paper manufacturer. This part of the discussion is purely domestic. With the exception of the news print Goliath finished paper has a tough time getting into the United States over the high tariff wall. A special committee watches the customs portals with the diligence of a tabby at a mouse hole. Verily, the way of the paper importer is hard, except for a few foreign specialties which scarcely classify as competition for the American paper manufacturer. Yes, the way of the paper importer has been hard, but now that the gold standard—that part of the story comes later.

The pulp manufacturer in the United States enjoys no such privacy in trade. He sits like a martyr in a Roman amphitheatre wondering out of which door the lions will spring. Even as Belgium is the popular battleground for settling the political difficulties of Europe, so is the United States the home grounds for fighting the world battle between pulp manufacturers. Here mix in one grand free-for-all Swedes, Finns, Germans, Norwegians, Canadians, and the domestic pulp producer.

The family of domestic pulp producers divides into two classes; he who makes his own pulp for the manufacture of paper in his own mill, and he who makes pulp only, for sale to paper mills other than his own. The first named has had to face a multifold competition ever since Wall Street went zero in 1929. He has had to sell his finished paper in competition with the paper mill that buys all of its pulp from outside sources. In view of rapidly declining pulp prices his own pulp mill has been thrown into competition with the open pulp market. The result has been that many such mills have found it more profitable to close their pulp departments under the stress of the market and to operate on cheap pulp purely as a converting mill.

The domestic producer who sells his pulp as an end product has had to meet the most drastic competition in a market which he rather feels ought to hold some preference for him, since it is his own country. The facts are that, instead of preference, the domestic pulp producer finds himself a pawn in the hands of the pulp-purchasing paper mill, to be used in a battle of prices. The competition of foreign pulp in the domestic market must be met on a give and take basis.

The many sulphite pulp mills which have sprung up on the Pacific Coast in recent years are all included in this second classification of the domestic pulp producers. They arose out of a combination of circumstances—a great domestic pulp insufficiency and an abundant supply of low cost pulp wood. Practically all of this new pulp tonnage, now amounting to nearly 400,000 tons annually, moves into the domestic market, being absorbed by paper mills located elsewhere than on the Pacific Coast.

While the new Pacific Coast pulp mills did not have time to get their feet set, to build up some reserves, before the storm of depression was upon the world, it is most significant that they have unflinchingly met the steady decline in the pulp market with continued operations. Although there has been no agreed curtailment of production, such as has been voluntarily enforced upon the Northern European producers, there has nevertheless been some slowing down in 1931 on the Pacific Coast. In general, however, operations have been at an excellent level.

There is in this continued operation of the Western mills a note of determinism, of intention to retain markets hard won. Certainly it was no passing whim on the part of Pacific Coast entrepreneurs that caused them to invest tens of millions of dollars of new capital in the finest kind of pulp producing plants in the past half dozen years. This new money was put into the pulp business on the definite conviction that the natural forest resources and other advantages on the Pacific Coast offered profitable employment of capital in a great domestic market.

The steady growth of pulp manufacturing on the Coast and the increases in production brought about even in the face of the difficulties of the two-year business slump is good evidence that the West Coast pulp investments were made on sound principles. Whether that point be argued or not, the indisputable fact remains that the Coast pulp mills have been built, that they represent the permanent investment of large sums, and that they constitute modern tonnage that will be continued in the market in spite of all odds.

Any recounting of the wide acceptance Pacific Coast

"Particular attention (with respect to the application of anti-trust laws) should be given to the industries founded upon natural resources, especially where destructive competition produces great wastes of these resources and brings great hardships upon operators, employes and the public. In recent years there has been continued demoralization in the bituminous coal, oil and lumber industries. I again commend the matter to the consideration of the Congress."

"Wages and standards of living abroad have been materially lowered during the past year. The temporary abandonment of the gold standard by certain countries has also reduced their production costs compared to ours. Fortunately any increases in the tariff which may be necessary to protect agriculture and industry from these lowered foreign costs or decreases in items which may prove to be excessive, may be undertaken in any time by the Tariff Commission under authority which it possesses by virtue of the Tariff Act of 1930." — President Hoover's annual message to Congress, Dec. 8, 1931.

pulp has established for itself on a quality basis in the pulp-buying markets is simply a regrinding of old meal. The present all-important factor in the pulp market is price. It seems to be the only thing that counts.

In preceding paragraphs the two-year decline in pulp prices was shown to illustrate how the pulp manufacturers have taken their beating. If it is thought that this decline in pulp prices would represent a clean-up for the converting paper mills the answer is "no." Paper prices did not exactly parallel the rapidly declining pulp prices, but they have nevertheless gone down, presenting more resistance in some grades, it is true, but nevertheless going down. The final result may be summed up about so: the paper mills have handed right on to the trade the possible profits coming from lower pulp prices. Nobody is ahead. Everybody is poorer.

In some few cases groups of paper mills operating on certain grades have managed to resist with unusual vigor a decline in selling price for their product. This chiefly has been possible where a strong cooperative action was evident. To maintain an isolated high position is, however, very difficult, for as bordering grades go down they tend to undercut the isolated group. Customers will substitute the lower priced grades and thus diminish the volume of the paper grades which maintain artificial prices.

The violent times now prevailing in the kraft paper market have deeper origin than is always admitted. The tremendous increase in kraft paper tonnage in recent years is more than purely a domestic regional battle. It is an international trade war. It is an effort to recapture for domestic payrolls a kraft pulp business that has been rapidly filtering over the international border to foreign mills. The result has been plain. When the new Southern kraft paper tonnage began to make itself felt the market on imported kraft pulp went down and down, down to a point where domestic production was squeezed out entirely in many quarters. It is most significant that in 1930 Sweden—which is the major source of supply that the United States has for imported kraft pulp—increased its kraft sales to the United States by some 22,000 tons, or more than 10%.

Cheap kraft paper could not help but make itself felt in other paper markets. Sulphite was squeezed when kraft made great inroads in the wrapping paper market. The toppling kraft structure brought the whole house down with it.

In the last quarter of 1931, with most of the pulp exporting nations going off the gold standard, the situation has become drastic for the domestic pulp producers. This has meant that the foreign mills could continue to pay their workmen on depreciated home coinage and turn around and sell their produce in the United States market for as much as a 25% premium. Had the foregn mills been content to pocket this unearned premium perhaps no complaint would have been heard from the domestic pulp producer, but here again the stress of sales has tempted the foreign producer to pass his advantage on to the purchasing paper mill.

The other angle on depreciated coinage is that it serves as an automatic cut in paper prices also, so much so that the avenue is opened for some grades of foreign paper to get into the United States market at a profit even after paying a substantial tariff. News print, duty free, has practically been considered as a fenced off business for Canada. The recent year, however, has witnessed an increase in European news print exports to the United States.

A specific example may be taken from the Pacific Coast. In January, 1931, news print was landed as follows—at Los Angeles: Finland, 23 tons; Norway, 165 tons; Sweden, 1,143 tons; Newfoundland, 2,320 tons; and Canada, 2,875 tons. At San Francisco: Norway, 225 tons; Sweden, 845 tons; Japan, 3½ tons; and Canada, 3,462 tons. At Portland: Finland, 100 tons; Newfoundland, 1,588 tons. At Puget Sound ports: Newfoundland, 2,272 tons; Canada, 6,122 tons. From these figures it is evident that Canada has no monopoly on the business. Further, it might be deduced that such substantial exports tempt European producers to sell other papers in this profitable market.

What's ahead? Sweden, world's premier pulp exporter, rumbles with a disagreement on wages between labor and employers with the beginning of 1932. This may lift Swedish pulp off the market temporarily. There is talk of emergency measures to prevent unloading of foreign goods in the United States market under the unfair advantage of a depreciated exchange. There is a growing inclination on the part of many individuals in the pulp and paper industry to think in terms of tariff. Even some big publishers, seeing a threat in a too-powerful Canadian news merger, are changing their views on a news print tariff. There is much sentiment among the domestic pulp manufacturers to take pulp off the free list. Other branches of the forest industries are thinking in terms of tariff. Even the powerful copper interests are uniting to seek a tariff. New copper deposits in Africa, worked with low cost labor, are pinching the American copper producers. Will enough pinch on a sufficient area of the paper industry's anatomy result in concerted action for a complete tariff that will protect the raw materials and semi-manufactures as well as the finished products, effecting, as the tariff proponents say, a return to the United States of all parts of a billion dollar paper industry?

EQUITABLE FREIGHT RATES ASKED BY COAST PULP MILLS

PACIFIC Coast pulp mills can see no reason why they should be subjected to the unfairness of having to pay tribute ranging approximately $1 per ton for having their pulp hauled to inland mills from Atlantic Coast ports. They have entered a united plea to the Interstate Commerce Commission to remove the differential. Expert traffic counsel has been retained to present the case.

Present rates in effect on backhaul Atlantic Coast railroads quote a preference on movement of imported goods. For example, imported wood pulp moves from Baltimore to Battle Creek, Michigan, in carload lots at 30½ cents per 100 lbs. However, should similar domestic pulp arrive from the Pacific Coast at the identical docks in Baltimore and move inland on the same train the rate is 35 cents. In other words, the Coast pulp must pay tribute amounting to 90 cents per ton.

Rates between other Atlantic Coast ports and other inland paper mill points show a comparable differential. It is because the West Coast mills can see no fairness in rates which favor a foreign product for the same type of service that formal complaint has been entered and relief asked.

A Sales Handicap

Similar preferential rates, of even wider discrepancy, exist on the rail backhaul for pulp landed at Gulf ports.

The complaint points out that large quantities of wood pulp are now manufactured on the Pacific Coast and marketed in eastern United States; that in marketing this pulp the Coast mills encounter strong competition with woodpulp imported from Sweden, Finland, Germany, Norway and other European countries and that the high freight rates are a distinct handicap to sales in the paper mill territory of eastern United States.

The complaint states specifically that on shipments of imported pulp the railroads publish and apply substantially lower rates to inland points from Atlantic Coast ports than must be paid on domestic pulp originating on the West Coast and moving to Atlantic ports via intercoastal vessels. The complaint charges that such discriminatory rates on imported pulp are unduly prejudicial to the complainants and in violation of section 3 of the Interstate Commerce Act.

Reparations Sought

In addition to asking relief from the discriminatory rates the complainants ask "reparation for such unlawful charges" and receive award of damages for violation of the act.

Production of pulp in Pacific Coast mills for shipment to outside markets now is in excess of 350,000 tons annually. While there are no available statistics to show the division of this traffic between all-rail and rail-water shipment, it is known that a very substantial tonnage moves by intercoastal vessels to Atlantic and Gulf ports and thence by rail to inland paper mills. Practically all of the West Coast pulp tonnage moves into the domestic market.

Thus it is evident that a tribute estimated at $200,000 annually is being paid to the Eastern backhaul railroads for a discriminatory rate. Further, this is being levied at the expense of domestic industry and to the advantage of imported pulp.

The situation is not new. A graphic account of these discriminatory rates was published in PACIFIC PULP & PAPER INDUSTRY some three years ago, but no definite effort has been made to push the matter to conclusion. Three or four years ago there was not the pressure to get the last dollar of advantage as pulp prices were much more attractive than now, and, further, Pacific Coast pulp tonnage was not nearly so great and the industry could therefore command less weight in presenting its case.

United Action

Following is a table of exemplary points which the complaint sets out as typical of the preferential rates applied to imported pulp.

REPRESENTATIVE DESTINATIONS AND RATES

Rates in Cents per 100 Pounds

Column 1 DESTINATIONS—	Column 2 Rates on woodpulp, C. L. ex Pacific Coast from Baltimore, Md.	Column 3 Rates on imported woodpulp C. L. from Baltimore, Md.
Battle Creek, Mich.	35	30½
Chicago, Ill.	38½	35½
Chillicothe, Ohio	30½	26½
Cincinnati, Ohio	33	29
Cleveland, Ohio	26½	25½
Dayton, Ohio	32	27½
Elkhart, Ind.	36	31½
Franklin, Ohio	33	29
Fulton, Ohio	29½	25½
Hamilton, Ohio	33	29
Indianapolis, Ind.	35½	31
Kalamazoo, Mich.	35	30½
Lockland, Ohio	33	29
Miamisburg, Ohio	33	29
Middletown, Ohio	33	29
Monroe, Mich.	29½	25½
Muskegon, Mich.	35	30½
Plainwell, Mich.	35	30½
Rittman, Ohio	26½	25½
Taylorville, Ill.	45	41½
Urbana, Ohio	31	27
Vicksburg, Mich.	35	30½
Watervliet, Mich.	36	31½
West Carrollton, Ohio	33	29
Ypsilanti, Mich.	33½	29
	Rates on woodpulp, C. L. ex Pacific Coast from New Orleans, La.	Rates on imported woodpulp C. L. from New Orleans, La.
Chicago, Ill.	41½	32½
Cincinnati, Ohio	33	26
Lockland, Ohio	33	26
Indianapolis, Ind.	41½	29½
Taylorville, Ill.	41½	30

The following companies have joined in the complaint: Puget Sound Pulp & Timber Co.; Grays Harbor Pulp & Paper Co.; Olympic Forest Products Co.; Rainier Pulp & Paper Co.; Shaffer Box Co., and the Weyerhaeuser Timber Co.

Some Drier Experiments

What goes on inside the shell?

By P. SANDWELL
Resident Engineer, Powell River Co., Ltd.

This is one of the papers presented at the Fall meeting of the Pacific Section of TAPPI held at Powell River, October 23, 1931.

IT is the intention of this paper to describe briefly some interesting experiments carried out on paper machine drying cylinders under operating conditions. The experiments were made at a time when a new condensate removal system was being developed, and with the object of proving certain assumptions which had been made in the course of preliminary studies.

It has been stated that at certain speeds, well within the present day paper machine operating range, water within a cylinder will form a film (of appreciable thickness) on the inside of the shell, resulting more or less in the insulation of the drier. Since it is necessary however, first of all to impart motion to the water particles so that they could develop the centrifugal force required to hold them against the drier walls, and since this motion could only be imparted by friction between the walls and the particles of water, we doubted whether the formation of a film was possible. Moreover, if the first film could be formed, it would seem that the formation of other films within this first film would be still less likely since the coefficient of friction between particles of water would certainly be even less than between water and the smooth internal surface of the drier.

Apparatus Used

We understood that an open ended drier had been set up in a machine manufacturer's shop and that at about 1,200 F.P.M. a film of water had been observed. We had no knowledge however, of the conditions of the experiment, or as to the smoothness of the inner walls of the cylinder, but it seemed likely that the test was run with cold water, in which case we believed entirely different results might be expected in normal drier operation, with water at comparatively high temperatures and consequently low viscosities.

We also knew of an experiment made with a small diameter seamed can, the result of which was cited as being typical of what might be expected in a larger, properly finished cylinder.

The apparatus we used for making the tests consisted of a probe made of ½" iron pipe carried through the front or tending end of a drier and projecting radially to within ⅜" of the shell. The probe was carried in a stuffing box and could be rotated by hand, an indicator on the outside of the drier showing the angle of the probe within. A test valve was fitted, which when opened indicated the presence of steam or water.

The first tests with this probe were made with the drier operating at a speed of 800 feet per minute, and water was allowed to accumulate during the period of the test. The results obtained were as shown on chart No. 1. A second test was carried out at a speed of 850 feet per minute, chart No. 2* showing the results of this test. From these two experiments we felt satisfied in assuming that there would never occur, within the range of speed we contemplated, any carrying over of the water within the drier, and that satisfactory evacuation could be obtained with a syphon system. Incidentally, we have actually operated a syphon system on five-foot driers at a speed of 1,270 feet per minute without any sign of trouble and without loss of drying capacity, which would seem to prove conclusively that the driers remain clear of water film up to this speed. At any rate the heat transference qualities of the driers were not affected.

Results of Test

After the completion of the installation, a check test was made with a similar probe, and the results shown on chart No. 3 were then obtained. It will be noted that on this occasion the paper machine was operating at a speed of 960 feet per minute. It will also be noted that in making the final test a greater degree of accuracy was secured by ascertaining not only the points at which clear steam and clear water samples were obtained, but by noting also the portion of the travel of the probe over which a mixture of steam and water was indicated. As a matter of interest a further chart No. 4‡ showing the result of similar tests carried out on a slower speed machine, is also included.

The next subject of investigation was that of drier temperatures, and especially the variation of such temperatures across the face of the machine. The first effort in this direction included the installation of a surface pyrometer so mounted as to enable it to be traversed across the face of the drier. Several experimental runs were made, but the results obtained were not reliable enough to justify the drawing of definite conclusions.

Thermocouples

The information disclosed by the surface pyrometer indicated the necessity of obtaining more definite knowledge of the behavior of the drier shell under various conditions, and a more elaborate series of tests was determined upon. For this second series, thermocouples were installed within the drier shell and the connections brought out through the front drier journals to slip rings, which enabled us to make continuous

*The corresponding data for Chart No. 2 is as follows:

Level	Depth	Angle	Level	Depth	Angle
1	2"	22°	5	8"	7½°
2	3"	17°	6	10"	6¼°
3	4"	13°	7	12"	6¼°
4	6"	9½°			

‡The corresponding data given in Chart No. 4, with the machine operating at a speed of 670 F.P.M. is as follows:

Level		1	2	3	4	5	6	7	8
Depth	"A"	1½"	2"	2½"	3"	4"	5"	6"	7"

or alternative readings. Four such thermo-couples were put in, distributed across the face of the drier and buried about ½" below the inner surface of the drier shell. The thermo-couple carriers were extended about three inches into the steam space, and four additional thermo-couples were placed so as to make it possible to read not only the shell temperatures, but the steam space temperatures.

A series of tests made at a time when the condensate valve was held open and the drier clear of water indicated very considerable variations of shell temperature. Towards the rear of the drier, between the steam inlet and the condensate pipe, temperatures of 295° F. were recorded, while at the front of the drier the temperature was only 266°. The saturated steam temperature was at the time 267° F. but more than 50° of superheat was being carried. It was obvious that the comparatively rapid circulation of steam from inlet to discharge caused a zone of very high temperatures toward the rear of the drier.

We then closed the condensate valve and allowed water to accumulate in the drier. After 20 minutes, in which time we would expect say two or three inches of condensate to collect, the test was repeated. We still had the highest reading at a point near the syphon pipe, but the temperature was within six degrees of the saturated steam temperature, while the lowest reading was only 2½° below the steam temperature.

Comparing the two tests then, we find that with the drier operating under the "blow through" system we had a total temperature variation of nearly 30° F.

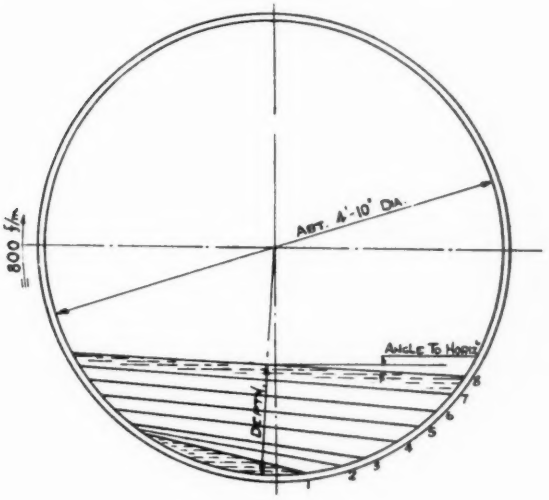


Chart No. 1

Level No.	Depth	Angle to Horizontal	Level No.	Depth	Angle to Horizontal
1	2"	14.0°	5	8"	5.4°
2	3"	10.2°	6	10"	4.6°
3	4"	8.2°	7	12"	4.0°
4	6"	6.4°	8	14"	3.6°

Water levels assumed straight.

Under the sealed system, the variation was only 7½°, and the difference between the lowest temperatures, which after all control the capacity of the drier, was only 1½° F. We were satisfied that we could carry several inches of water in the drier without affecting its heat transference capacity, and that we could obtain thus practically even temperatures clear across the face of the machine.

We found also that so long as one prevented the rapid circulation of steam, superheat had no ill effect. The comparatively small amount of heat carried by the steam as superheat is very easily given up to the blanket of wet steam which lies in contact with the shell during operation.

As to the contention that the drier capacity will be lowered by the presence of a small quantity of water within it; we can state positively that the condensate

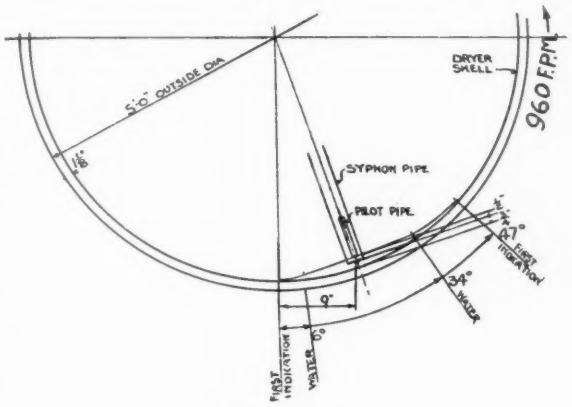


Chart No. 3

BI&S Condensate Control System, probe test in dryer No. 23, No. 5 paper machine. The probe used in this test consisted of a ½" I. P. S. pipe carried throught the front end dryer journal and dropped inside the dryer to within ⅜" of shell. Probe was free to swing and a test valve on outer end indicated when inner end was submerged in water. The BI&S controller was functioning regularly during test.

discharged from driers operated in this manner is within a few degrees of the temperature corresponding to the steam pressure carried. The water at the bottom of the driers is in a constant state of agitation and is imparting heat to the drier shell as freely and as rapidly as the steam from which it is formed.

The primary condition we had in mind in designing the new system was economy of steam usage, which we proposed to attain by assuring complete condensation of the steam used within the drier, and the control of the discharge valve in such a way as to prevent the evacuation of steam. It was at least gratifying to find that in doing this we were improving the drier operation.

The third series of experiments which this paper is intended to deal with was concerned with the evacuation of noncondensible gases from the driers, especially during periods of starting up. The apparatus in this case consisted of a probe similar to that used in the tests made to ascertain the location of water within the drier, except that the valve instead of discharging to atmosphere, controlled the discharge of the gases to a condenser. The gases after passing through this condenser were discharged to a closed vessel, condensate itself being measured as it flowed from the vessel.

Previous experiments made with a view to determining the accumulation of hydrogen within the driers had shown that although there was absolutely no evidence of stratification, higher concentrations occurred in the lower part of the drier, and the probe was therefore fixed so as to take samples continuously from this location.

The tests were made after the installation of the condensate system to which reference was previously made, and in the first case the machine was started up

in the normal manner with the condensate system working normally and discharging condensate as it accumulated. No attempt was made to clear the driers by the use of the air valve on the front journal, and the only vent for air, etc., was made by the pilot pipe of the condensate system. The chart† shows that about 40 minutes elapsed from the time steam was originally admitted to the driers to the time at which the first clear indication of steam occurred. The concentration of gases then very rapidly decreased and within 90 minutes after the time of first admission of steam, had reached negligible proportions.

In the second experiment† air valve on the front end of the drier was opened for 10 minutes after the first admission of steam, this being the usual practice on these machines. The curve shows the difference made by this 10 minutes free vent of gases. The time required to clear the driers of a sensible accumulation of gases was reduced to about 40 minutes.

In order to speed up the starting of the machines, we had designed auxiliary equipment so that when the driers were cold, and for a short period after the admission of steam, all of the condensate valves would remain open, allowing free blow through of condensate and glasses. The test† was made during a normal start up, but the condensate system operating in this manner, no assistance being given by the use of the air vent. A very rapid evacuation of noncondensible gases was obtained in this way, and in the test, the driers were practically clear inside of 30 minutes.

Similar conditions prevailed during the test shown on A-4127, except that we gave the driers some relief through the air valve, in addition to the relief obtained through the condensate system. There was no noticeable difference in the time taken to clear the driers, and it seemed obvious that the opening of the condensate valves effected the clearing process about as rapidly as was possible, and that if this scheme was adopted the use of the air vents could be discontinued.

The experiments are interesting as showing the time required to get rid of the air from the driers when starting up from the cold. Under normal operating conditions, however, the advantages of slow steaming so as to avoid drier strains, are such that the additional time which is spent in clearing the driers of air is of comparatively small consequence.

On mid-week shutdowns, however, when a machine is normally operating at extremely low pressures, negative pressures may easily be formed within the driers when the steam is closed off, and with the average type of drier joint, these negative pressures induce an inward flow of air. The advantages then to be obtained by the rapid evacuation of this air and noncondensible gas are quite considerable, and seemed to justify the development of this feature of our condensate removal system.

†The tests mentioned in these instances are similar to that of A-4127, graph for which is shown with this article.

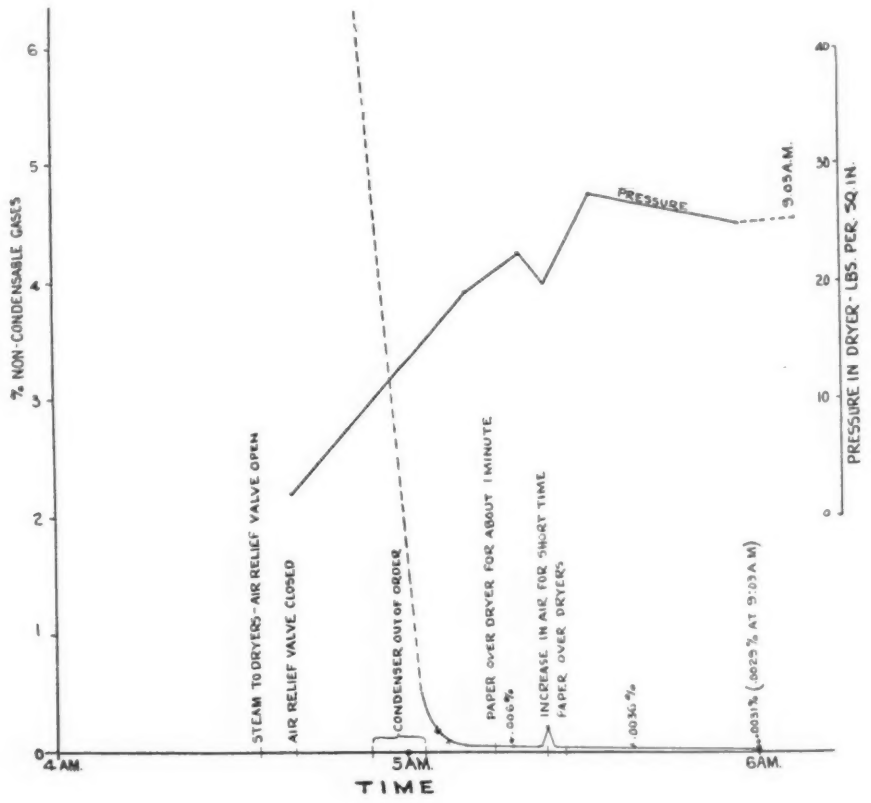


Chart A-4127

The chart has been shortened slightly to save space. The original shows the curve of non-condensable gases beginning at 7.75% at 4:50 a.m. The test was made on the tenth bottom dryer from dry end on No. 5 paper machine. Samples were taken from front end of dryer. Values as % by volume. Conditions of the test — the condensate discharge valve was held open from the start and thruout the test. The air relief valve on front end of dryer was open for about six minutes after steam was turned on. Syphon pipe end ¾" from dryer shell. Syphon pipe end 1¼" from dryer shell.

Big Pulpwood Deal in British Columbia

One of the biggest deals in pulpwood to be put through in the Northwest in recent years is now being negotiated and on the events of the next few weeks will depend whether or not it materializes.

Falk Corporation of Milwaukee, allied with the Allis-Chalmers interests, are holders of some 7,000,000,000 feet of timber in the Quatsino district of northern Vancouver Island, and a deal is now pending for the disposal of this timber to a Pacific coast syndicate said to include two large publishing houses in Los Angeles and San Francisco and the Crown Zellerbach Corporation.

George T. Cameron, manager of the San Francisco Chronicle, and Harry Chandler, publisher of the Los Angeles Times, are reported to have been taking a prominent part in the negotiations. The Falk interests have been represented by the J. P. Meehan Company, timber brokers of Vancouver, B. C.

F. W. Leadbetter is said to have a hand in the deal, but the extent of his interest has so far not been divulged. Mr. Leadbetter's company owns the plant of the Vancouver Kraft Mills, Ltd., at Port Mellon, Howe Sound, B. C., and it is said that the plan is to contemplate the purchase of this mill by the California interests named.

Reports to the effect that pulp logs would be towed from Quatsino Sound to California for milling into pulp and newsprint are probably incorrect, as the British Columbia government would almost certainly veto such a plan, as it would be directly opposed to its established policy of encouraging manufacture of timber products within the province as much as possible.

Any endeavor to export pulp wood from the Quatsino tract would meet strong opposition from existing mills in British Columbia.

However, there probably would be no objection to the export of pulp. If the Quatsino deal goes through and the Vancouver Kraft Mills are bought, it is reported that the logs might be converted into pulp at that mill and shipped as pulp to the United States consumers.

Rainier Mill Operations at High Level

One of the brightest spots in the industry has been the steady operation of the Rainier Pulp & Paper Company's mill at Shelton, Washington. Some 300 men are employed in the mill and others are indirectly attached to the payroll thru employment in cutting wood, and similar auxiliary services.

The Shelton mill started out in 1927 to produce high grade bleached sulphite pulp and worked up an enviable market. In the past year the mill has swung gradually out of the paper grades of sulphite as its experiments on rayon grade cellulose were perfected. At present the mill produces a premium-grade cellulose, all of which finds outlet in the rayon and cellophane industries.

Following the settlement of a local stream pollution problem which temporarily closed the mill some months ago, the Rainier mill has operated at an exceptionally full schedule. D. B. Davies, general superintendent, has been in charge of Shelton operations since the beginning of production in 1927.

Frank Killien, assistant superintendent at the book paper mill of the Everett Pulp & Paper Company, was official guide on a tour of the Everett mill on the occasion of a recent visit to the mill by a local civic organization.

Leadizing Pipe Lines In Pulp-Paper Mills

Some Pointers

By O. C. SCHOENWERK
Consulting Pulp and Paper Mill Engineer

One of the most serious troubles of a modern pulp mill is dirt in stock lines. A great deal of thought has been given to the prevention of same. Many materials have been used in an effort to prevent dirt, rust and slime.

In the West, wood stave pipe can be used extensively, being cheap to install and providing a material that lends itself well for the purpose. A great deal of pipe of the so-called wire wound type has been used for this purpose. Altho helping to solve the problem, wire wound pipe has the serious objection of requiring many joints which in the past have been of cast iron, causing rust. The binding wires have frequently failed, causing floods and other annoyances.

The ideal wood stave pipe therefore is the continuous stave type, banded instead of wire-wound, thus eliminating all joints except at turns or where attached to pumps, tanks or other fixtures and equipment.

For joints, elbows, take-offs, etc., a material lending itself in ideal manner is welded steel, **leadized.** Fittings of this nature may be welded to any desired form—elbow, lateral flange or most any conceivable shape—and when leadized will not rust. Such pipe will keep down friction. As the ends of fittings are made to pipe inside diameter they allow the pipe to be banded on quickly and easily.

The leadizing process consists of electroplating with lead and reversing polarity, then dipping in molten lead, giving a material that has lead penetration well below the skin of the steel fitting. In recent installations fittings of this type used extensively have eliminated enough of the old style castings to pay for themselves and cost of pipe installation has been materially reduced.

Leadized fittings have also been used in place of castings and in place of untreated metal to prevent corrosion in acid plant and in bleach plant, being an ideal material in both divisions.

The leadizing process was developed in 1917, for use in railroad terminals where it had been found that a combination of coal smoke and steam developed dilute sulphuric acid. Since that time the process has been applied to other industries, including paper mills, public utilities and oil.

Inland Empire Mill Elects Officials

A slight improvement is noted in the paper market, especially in the territory served by the Millwood, Washington, plant of the Inland Empire Paper Company, according to a report submitted to the annual meeting of stockholders in November by W. A. Brazeau, secretary and sales manager.

The old board of trustees was reelected, with W. H. Cowles, Sr., chairman, consisting of L. M. Alexander and John E. Alexander, both of Port Edwards, Wis.; Judson G. Rosebush, Appleton, Wis.; Waldo E. Rosebush, W. A. Brazeau and W. H. Cowles, Jr.

The trustees elected L. M. Alexander, president; Judson G. Rosebush, vice president; Waldo E. Rosebush, treasurer and general manager; W. A. Brazeau, secretary and sales manager.

More about

Corrosion Resisting Steels

in the paper industry

MORE and more attention is being paid to steels, that is, the new steels which are demonstrating their ability to solve problems of excessive corrosion and wear in the pulp and paper industry. Following publication of the article "Steel Has Something To Say To The Pulp And Paper Industry" in the August issue, a number of interesting comments from widely divergent sources have come in.

Because many of these letters so definitely indicate changing trends in the industry and the great amount of thought being turned to the use of the new steels a number of the comments are presented herewith. One of the most interesting comes from C. S. Hardy, of the William A. Hardy & Sons Co., Fitchburg, Mass., one of the oldest companies of its kind. Mr. Hardy comments:

"It seems to us that you have most adequately answered the four objections to the use of steel with the exception of the second, and yet it seems with the rapidly declining prices for steel castings that the difference between the cost of the low copper fitting and the steel fitting is being well taken care of. Of course where copper is so very cheap many of the sulphite mills will think twice before purchasing the higher priced steel fittings, but it seems to us that in time they will recognize the ultimate economy in their use. This economy will include not only the extra life of the fitting, but also the lesser amount of labor and attention which will have to be given the fitting for repairs.

Steel Valves

"As you are undoubtedly aware we have just made up seventy-five Chrome Nickel Steel Valves on order from the Weyerhaeuser Timber Co., and these are to be used in their new Sulphite Mill at Longview. This is the first large installation we have made; most of the mills up to this point having experimented in a comparatively few installations. However, the late reports on equipment which have been in three years have been so satisfactory that we believe that the above order is only an indication of what we may expect for developments of this class of equipment in the future.

"We are not steel experts. We are leaving the development of these steels to the steel experts employed by all of the major steel companies. We believe they would be free to confess that though their knowledge of these new steels has developed beyond the point of experimentation there is still much to be learned, and their research departments are busy with these problems and undoubtedly within a short time all of the alloys will be perfected.

"Of course, we are recommending these steels in sulphite mills and other chemical plants where corrosion has heretofore necessitated the use of bronze fittings. The new steels have greater tensile strength than bronze, and of course higher resistance to corrosion agents. It means that lighter wall thicknesses may be used, and the cost of the equipment can thus be pared down so that it more nearly reaches the price of the cheaper metal.

"Steel manufacturers are cognizant of the new field for their products and we find they are actively soliciting the mills. On the other hand, although we are primarily manufacturers of bronze, we early recognized the importance of these new discoveries as effecting our business and knew there was no use to expect that we could talk bronze when better materials were available. For this reason we were one of the first to manufacture and extensively advertise chrome nickel steel valves and fittings.

Increased Use

"We are interested to note comments in the article on screen plates as we are the oldest cast bronze screen plate manufacturers in the country. The substitution of steel for bronze in this particular can not be hoped for until the steel manufacturers themselves are able to manufacture milling cutters, saws, etc., necessary to fabricate a chrome nickel steel plate. The cost of machining this with present tooling equipment is way beyond any economies that can be expected, but there are a few experiments being made to determine the life of such plates and this will have considerable bearing on the adoption of this metal for the purpose of screen plate manufacture."

Hardy S. Ferguson, one of the best known consulting engineers in the pulp and paper industry, adds the following comment:

"I read with interest the article on 'Steel' in your August issue, and it seems to me that the situation with regard to the adoption of special steel in the pulp and paper industry is correctly described therein.

"I think that there is to be a greatly increased use of these special steels in all industries, including the pulp and paper industry, as time goes on, but that the present obstacle to development is largely one of cost. I do not think, however, that in the sulphite industry, manufacturers are fully convinced that these alloy steels should replace bronze as an acid resisting metal, although some of the manufacturers apparently have had very satisfactory results from its use, at least in certain applications."

In Electrical Equipment

The Westinghouse Electric & Manufacturing Co. have supplied a great variety of equipment for the pulp and paper industry and have demonstrated initiative as a member of the allied industries in the development of many new principles in the application of electric power to the manufacture of pulp and paper. Indicating that the electric equipment companies are alive to the new development of steels is this letter from W. D. McDonald, manager of the Seattle office of Westinghouse:

"I was very much interested in the article as it points

out to the manufacturers of equipment for the pulp and paper industry the importance of carefully selecting the grades of steel for their special applications.

"From the very beginning the Westinghouse Co. has conducted extensive research in the development of new steels and new materials. These new steels and new materials are constantly being improved and are used throughout the electrical equipment. It would be interesting to note that even in so common a piece of electrical equipment as an electrical motor there are at least five grades of steel used.

"Our company is continuing its research and study in the development of new steels and as new materials are developed and produced they are used in the manufacture of our equipment.

"It is my opinion that the pulp and paper industry could save capital expenditures and maintenance expense by the careful selection of steels both in pulp and paper machinery and in building structures.

"I believe the greatest pressure exerted to advance the adoption of special steels is coming from the steel manufacturers. Not all pulp and paper mill operators appreciate the advantages of the various steels on the market."

The Bird Machine Co. of South Walpole, Mass., has in its many years of close association with the paper industry developed many refinements in equipment. Mr. Lauren Laird, acting manufacturing manager, has commented as follows on the new steels:

"We have as a standard a stainless doctor blade for doctoring certain paper machine rolls on which corrosion, caused by moisture, would be objectionable. We have considered the use of stainless steel in other places but as yet have not had any experience with them.

Machine Wet Ends

"We feel that undoubtedly special steels will be used more and more as the steel manufacturers overcome the objections of high cost and lack of uniform quality."

So many paper machines have been built by the Beloit Iron Works of Beloit, Wisconsin, that it is scarcely necessary to introduce G. A. Macklem, vice president in charge of sales for that company, who comments as follows:

"You are exactly right in the growing use of steel in the wet end of paper machines. Today we use steel for supporting our new fourdrinier parts, also on our savealls instead of brass we use steel, our suction boxes on wide high speed machines are made of steel instead of brass, in fact we use steel in many, many places where we formerly used brass as it is stiffer and lighter, therefore better adapted to high speed work than brass, as to get the brass strong enough for the wide machines and to stand the high speed it would be very heavy and clumsy, whereas the steel is very much lighter and naturally very much stronger and the new steels, rustproof!"

And from a manufacturer of digesters the following comment from F. G. Sherbondy of the Biggs Boiler Works Co. of Akron, Ohio, is particularly interesting in view of the potential early appearance of the all steel digester:

"We have done some preliminary work in the way of building experimental digesters from Enduro KA-2-S and similar alloys.

"We are inclined to feel that the chemists and plant management of the paper industry are proceeding slowly on this question, first being sure that the materials will do all that is claimed for them.

"Such metals as Enduro KA-2-S, Allegheny Iron, etc., cannot be used to any great extent commercially until the cost of manufacture is reduced, for I do not believe the saving in the cost of maintenance on the average operation is sufficient to warrant an increased cost, although there may be some certain processes where discoloration will warrant the cost of this high priced metal, regardless of its cost.

"It is our opinion that these metals will show a steady increase in use, but it will be some time before the tonnage used will amount to a great deal. That is, there must be a material reduction in the cost of the base metal before there will be any semblance of the material being used commercially for large digesters."

The steels are coming!

Refinements in Weighing Practice

The accurate weighing of materials used in the manufacture of paper has long been an essential point in quality workmanship. Accurate weighing instruments not only aid in the computing of materials, but also serve as checks on incoming and outgoing shipments and serve a variety of purposes throughout the paper mill.

Scales are in hourly use and, therefore, should be in perfect condition at all times. However, as all mechanical devices will, they sometimes break down, thus destroying the routine and causing loss to the manufacturer in time and money. A new development in the manufacture of scales, which has cut down the possibility of loss through improper functioning of scales, has recently been announced.

Pivots and bearings, which hold the great strain present in every scale, have a tendency to wear slowly to the breaking point, after years of service. The insertion of new pivots and bearings formerly required the services of an expert scale mechanic and two or three days were required to put the scale back in working order. Now, through this new development, it is possible to change a complete set of pivots and bearings in the Toledo springless scale in from one to two hours. No scale expert is needed and this repair can be made by the average mechanic.

This development, which has completely revolutionized heavy duty weighing, came about as a result of diligent research on the part of the fine staff of Toledo engineers. Machines were developed and new equipment installed, which absolutely eliminated all chances of human error. The holes in levers are now bored automatically with unbelievable precision. The bearings are ground on a new diamond grinding machine which insures absolute accuracy. The pivots are inserted into the levers in an automatic machine, which eliminates all necessity for honing and grinding.

This new development has not only speeded up the actual manufacturing process in the scale industry, but has lowered manufacturing costs materially, thereby enabling the Toledo Scale to incorporate into its product better materials at the original price.

The paper industry is in a position to profit by this new development. Expensive scale repairs which caused a loss of time and labor can now be eliminated. Automatic weighing can be used with the assurance that after years of service the greatest breakdown can be repaired with little loss of time. Because of the general use of scales in the paper industry every paper manufacturer should be vitally interested in this new development.

DIGESTER LININGS RESPOND TO FAIR TREATMENT

The net answer is lower per ton cost of pulp

A Discussion
By A. S. QUINN
Pacific Coast Manager
Stebbins Engineering and Manufacturing Company

THE life of any digester lining is primarily dependent upon four major factors; (1) the construction of the steel digester shell; (2) the materials entering into the construction of the lining; (3) the workmanship employed on the installation, and lastly (4) the care which the lining receives while in service. Experience has shown that a very durable lining can easily and quickly be ruined by poor shell construction. At the same time, this same lining would be destroyed just as easily if installed in a bottle tight shell and not properly cared for while in service. Consequently, it becomes necessary for us to consider all of these factors when estimating the probable life, which in reality amounts to estimating the cost of the lining per ton of pulp produced, for any given digester installation.

Standardization of shop practices coupled with the rigid inspection service now offered by insurance companies has brought about marked changes in the construction and erection of digester shells. There is, however, one important step in the direction of safety first which is often overlooked by mill operators before the lining installation begins, namely, the application of a steam test to the new shell.

The main purpose of this test is to take up the creep or stretch at the riveted seams and assure the mill owner that his shell will be tight under operating conditions. The hydrostatic test alone will not give this assurance. A steam test should always be applied to a new digester shell or to an old shell on which repairs have been made before the lining installation begins. The construction and erection of a digester shell is no job for an amateur and should be intrusted only to those thoroly familiar with the requirements of a pressure vessel of this nature.

In selecting the materials for digester work the greatest care should be exercised to make absolutely certain that only the highest quality brick and joint material be used if a durable lining is to result. A brick which furnishes a minimum of porosity with the ability to meet the expansion and contraction strains which are applied to digester linings has proven most desirable. A durable brick should be molded from selected clays to withstand not only the action of the cooking solution but also the varying temperature and pressure strains encountered in operation.

The same careful study should be given the selection of the joint materials for rapid destruction will follow the failure of the joint. Although there are a number of joint materials on the market, experience has proven that the litharge composition joint merits its accepted position in the trade. It is positively acid proof for digester work and possesses excellent bonding qualities.

Careful selection of materials alone is not sufficient guarantee of a good finished digester installation. The human factor is highly important. One may have a bottle tight digester shell and select the highest quality lining materials. Yet, if the actual installation of the lining is left to inexperienced help, unfamiliar with the work in hand or the process in which their finished labor plays such a vital part, the results will not be satisfying.

Care must be exercised in the handling of the joint materials to guard against hair cracks that often result from disturbing a brick, which has been placed in position, while the joint material is taking its final set. With specialization proving its many advantages in all departments of the industry today, it is conceivable that a mason constantly engaged in digester work and thoroly familiar with the process in which the results of his efforts plays such an important role should be capable of the highest quality workmanship.

A digester mason, like a machine tender, cannot be developed overnight and be expected to turn out a finished product that will compare with the results obtained from that old school, experience. Carelessness is the bug-a-boo of a digester mason and is generally cured by having the man himself service a faulty installation and experience at first hand the difficulties encountered by the operators thru a faulty lining. Only trained men thoroly familiar with the work in hand should be employed for digester work.

A durable lining, installed in a bottle tight shell, is the first requisite to low per ton lining cost. It remains for the operators to see that this digester is handled in a normal and proper manner and not subjected to unnecessary strains which will severely tax the lining. A little forethot will often result in added months of service. Following are some helpful pointers:

When a digester lining has been completed and the scaffold removed, at least five full days should be allowed before the digester is put into service. Experience has shown the detrimental effect on linings which have been put into operation before the cement backing has taken its final set. Following are some suggestions for starting up new or newly lined digesters:

At the end of the five-day curing period, admit a quantity of steam and release the condensate so as to avoid any pressure within the shell. The temperature should be gradually raised at a uniform rate over a 36-hour period to 212 degrees Fahrenheit. After the 36-hour warming period, the digester should be filled

with chips and acid as quickly as possible, and the first cook started. During the first five cooks the pressure for the

1st hour should not exceed 3 lb. gauge.
2nd hour should not exceed 8 lb. gauge.
3rd hour should not exceed 14 lb. gauge.
4th hour should not exceed 23 lb. gauge.
5th hour should not exceed 34 lb. gauge.
6th hour should not exceed 45 lb. gauge.

This means that the first cook should be of long duration, not less than 18 to 20 hours. Following the first cook, a slight reduction in cooking time may be allowed, but not until the second five cooks should the cooking time be steadily reduced to regular schedule.

In an earlier paragraph it was stated that a digester brick should have a minimum of porosity. Assume a new digester lining, just placed in operation. It will be readily admitted that the cooking liquor penetrates the pores of this brick. In fact, the penetration may be measured by the pressure in pounds per square inch applied to the digester. As the pressure is released a black area may appear on the face of the brick. This is commonly referred to as a "wet spot" or a "sweating" lining.

After cooking operations have been carried on for from sixty to ninety days, the pores of the brick are filled with the lime compounds carried into the brick with the cooking liquor and the lining becomes perfectly dry. It is for this reason that many operators purposely carry a heavy lime content in their cooking liquor during the first five cooks when breaking in a new lining. Some operators have been known to dump one or two hundred pounds of powdered lime on the chips directly below a porous brick to aid in this lining action. Experience has shown that in nine cases out of ten where small wet spots appear in the early days of a new lining, the entire lining has been perfectly dry at the end of fifty or sixty days. Small wet spots on a new lining should not cause the operators undue concern. They will invariably dry up themselves.

Manufacturing today is a science of many complications. Efficiency in industry has necessitated the delegation of special tasks to those who are by accumulated experience specially qualified.

Setting one brick on another is not just another job of masonry when exact conformation to difficult contours is involved, when consideration must be given to steam pressures and corroding acids.

Careful workmanship in setting the lining is not assurance in itself of long lining life and consequent low per ton lining cost. The pulp operator must recognize certain fundamentals and accord fair treatment.

In this article Mr. Quinn points out the "reason why" behind lining installations and points out some common abuses in operating. A better understanding of these things will help the pulp man toward more economical operation.

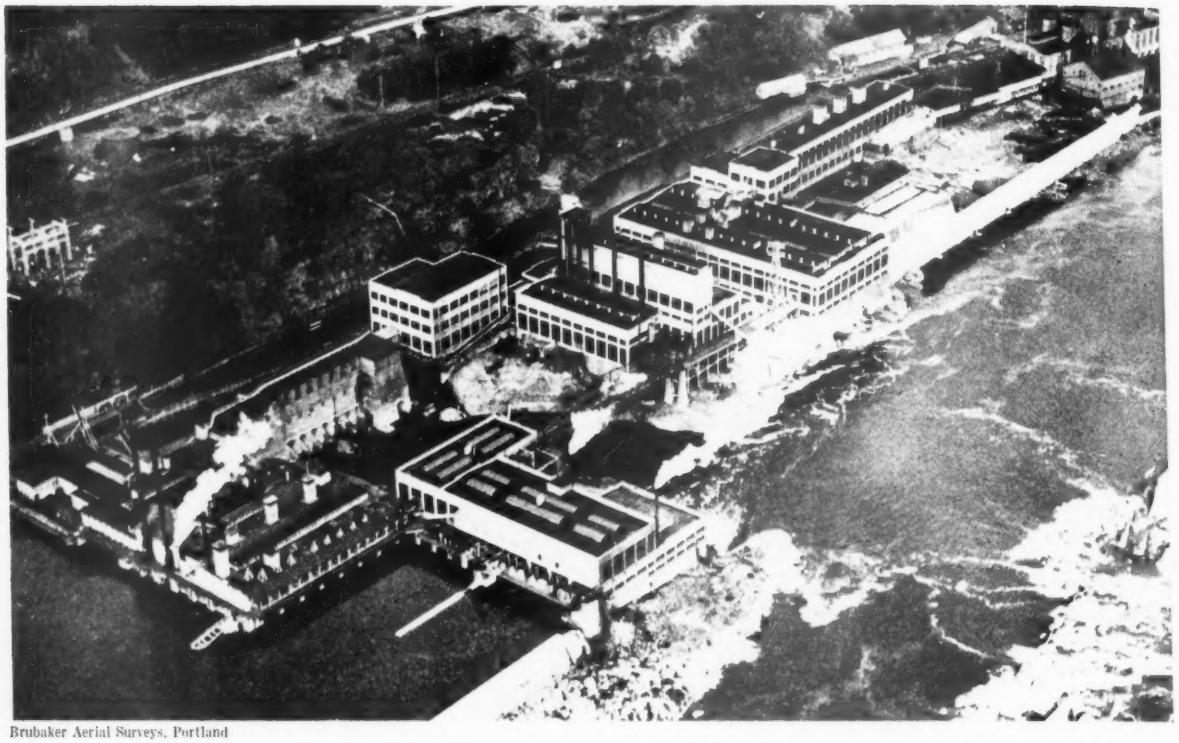
In penetrating the pores of the brick the liquor may come in immediate contact with the steel shell. This suggests another commonly discussed point of "bleeding rivets". Sulphite men are familiar with the strings of caustic hanging down in the form of icicles on digester shells. Invariably in such cases a door will be found wide open thru which a cold draft is blowing directly on the shell in question. Altho the presence of the caustic on the shell does no particular harm it does detract from the shop-like appearance of the digester room. Cold drafts causing unequal expansion and contraction at the riveted seams are the principal cause of "bleeding rivets." Such drafts can easily be avoided.

A. S. QUINN
Pacific Coast Manager
Stebbins Engineering and Manufacturing Company

All "bleeding rivets" should be calked and all doors and windows kept closed as much as possible. Altho a draft from an open door may not seem very pronounced during the day, a temperature differential is set up which is decidedly more pronounced at night, when the outside temperature drops considerably.

The use of the present litharge composition as a joint material does not require the excessive maintenance that the older type of joint always did, but at the same time a litharge joint is subject to the abrasive action of the chips and should not be neglected. No longer is it necessary to shut down a digester while a mason repoints every joint from top to bottom. The accepted practice today is to repoint all fittings three or four times a year, particularly the bottom nozzle casting and first three courses in the bottom of the cone where the first sign of wear is generally noticed. With good brick bonded by litharge joints the operators can devote their attention to the maintaining of all fittings on the digester.

A lining is not just a lining. The brick is designed for a particular job, a chemical job. A sulphite digester lining cannot by any stretch of the imagination be expected to give satisfactory service if used in the manufacture of other forms of chemical pulp. It will not meet the varying conditions of the separate processes. The manufacture of Kraft pulp requires the use of an entirely different cooking solution than is used in the sulphite industry; each require an entirely different type of digester brick. This also holds true for the manufacture of sodite pulp. Active cooperation with a recognized lining contractor to determine the particular requirements of an individual mill will pay large dividends and avoid the heavy losses encountered thru lost production caused by the selection of the wrong type of material for lining purposes.



Brubaker Aerial Surveys, Portland

The West Linn mill of the Crown Willamette Paper Company is a pioneer enterprise in the pulp and paper industry of the Pacific Northwest which has in very recent years grown to such substantial proportions. Founded in 1888 at Willamette Falls on the Willamette River to furnish groundwood pulp for the making of news print at a mill in Stockton, California, the West Linn plant has been gradually expanded into the 350-ton news print mill that it is today.

West Linn Mill Figures in Remodeling Program

Altho much talk "in the street" revolves around the prospective conversion of the West Linn news print mill of the Crown Willamette Paper Company to higher grades, the reports are lacking in official confirmation. The plant now has a daily average capacity of 350 tons.

One spokesman for the company has assured PACIFIC PULP AND PAPER INDUSTRY that the mill will continue on news print production, but that some changes may be expected which would put the mill into production of better and special grades of news. Regarding the possibility of the mill going off of news entirely and into higher grades of sulphite specialty papers, this was regarded as unlikely as an immediate prospect. Further, it was pointed out that conversion of a mill to other grades is an expensive process, and a complicated problem, requiring a thorough study of the subject before any action could be taken.

The West Linn mill is one of the pioneers in the Pacific Northwest. It was founded on the Willamette Falls in the Willamette River about 15 miles above Portland. The mill buildings are literally tucked in against the narrow shore of a small canyon immediately below the falls. Direct water power is used for grinding pulp and, as the water run-off is seasonal, a grinder capacity considerably in excess of daily average requirements is required. This necessitates storage of large quantities of groundwood pulp.

Current street talk mentions improvement of the mill water system, possible installation of a bleach plant, modernization of steam and electric plant, and rebuilding of several of the paper machines. These talked-of improvements have not been confirmed by the management, nor is there much inclination to discuss them as prospective changes.

The West Linn mill has nine paper machines, as follows: one 65-inch; one 76-inch, two 84-inch; one 102-inch; two 150-inch; one 158-inch and one 164-inch.

C. E. Bruner is resident manager of the West Linn mill.

Foreign Paper Dumped on Pacific Coast

"In these days of American unemployment, and depression in the paper industry, it is astonishing to note that on the Pacific Coast the public school authorities are providing imported paper to distribute to the school children."

This was the statement made before the Salesmen's Association of the Paper Industry by Warren B. Bulock, manager of the Import Committee of the American Paper Industry, which represents the American paper manufacturers in an effort to prevent unfair foreign competition. He added:

"This matter came to our attention when we investigated the low prices reported for foreign paper imported at various Pacific Coast ports. We then discovered that this low-priced paper was coming from foreign mills at a time when there is severe depression among the United States mills.

"There is even suspicion that the paper is being imported in violation of the anti-dumping law. The public school authorities of the Pacific Coast are probably unaware that they are using imported merchandise, when the mills who are losing this business are being asked for contributions to sustain the unemployed. The federal government's paper contracts are required to be filled with domestic paper."

PLANNED PERPETUATION OF FOREST INDUSTRIES

An Interview with
MARK REED
President, Reed Mill Company

THE establishment of pulp and paper mills in the state of Washington has changed the forest situation in that state very materially. These new type wood-using mills have created a wide market for logs, so that in all probability we will not have to wait as long as we otherwise would to harvest a second crop from our cut-over lands.

In the case of our own operations during the last five or ten years we have been able to see the cut over lands reforesting. The time is coming when these lands will have some definite value, I hope. And so it should be with the state's holdings. Most of the areas are and will be for many years to come best adapted for the growing of timber. These public lands should and can be made productive in perpetuity and remain a real live asset to the state for all time to come.

An opportunity presents itself in the state of Washington to undertake on a sensible basis a program of sustained yield timber production that has no parallel anywhere in the United States. The state has this opportunity in laying a program for its vast state timber holdings, in Jefferson and Clallam counties, where in one block of about 200,000 acres the cruise shows upwards of 5,000,000,000 feet of timber. It would be wise for the state to take steps to see that this large area, when logged, be harvested on a sustained yield basis. In other words, that the timber be removed in an orderly manner and in accordance with a carefully worked out plan, with the end in view of having a new crop ready to cut by the time the virgin stand has all been cut.

I believe that by conserving the state's timber and not cutting it all off in a few years, as is apt to be the case unless some plan is developed, and by cutting the forest service timber in the same manner and by the loggers operating their own adjacent privately owned stumpage on a sustained yield basis, it will be possible for us to extend the life of Washington's great wood-using industries for many years to come, or until such a time as a new crop of timber will be ready.

The state has this large block of timber land. There are no other state holdings like it anywhere. The United States Forest Service is now operating the federal timber holdings on a sustained yield basis and some of the private timber owners are adopting a similar policy. It seems the sensible, practical thing to do. All that is needed is a simple workable plan without frills.

The state, of course, has many scattered timber holdings which could not come under a sustained yield plan. Obviously such timber, when in the path of existing lumber operations, will be purchased and cut when reached. This is as it should be. It would be impracticable to put these scattered holdings on a sustained yield basis.

We should not wait until all our timber is cut, as was done in some of the eastern states, before giving thought to the future. The time to develop a sustained yield plan is right now before our stands of private and public timber have been cut. Such a program will mean that lumbering, pulp manufacture and other wood-using industries will remain as they should—great major industries.

¶ Mark Reed is one of the best known figures in the forest industries of the Pacific Coast. As president of the Simpson Logging Company, and the Reed Mill Company, Shelton, Washington, he is an active figure.

¶ He is also prominently identified with the Rainier Pulp & Paper Company at Shelton, the only West Coast company manufacturing a bleached sulphite pulp of rayon grade.

¶ Mr. Reed was an instrumental figure in getting the Shelton pulp mill located. In so doing he became an active pioneer in greater and more economic wood utilization for his sawmill was tied up directly to the new pulp mill to supply a major portion of wood chips—converted from the sawmill wastes — and hogged fuel for steam and power requirements.

¶ His logging operations also tie in with the pulp mill and provide a means for utilization of the smaller timber, so much of which has been destroyed over the years in the normal course of logging.

¶ Mr. Reed has witnessed both the lumbering and pulp industries grow to their present proportions in Washington. He has the benefit of perspective in visualizing the problems that have developed as the forests have been cut over. He is now greatly interested in formulating a plan that will perpetuate the basic wood-using industries of the state.

Says Pulp Demand Boosts Hemlock Price

Commenting on comparative log prices on Grays Harbor and on Puget Sound, William Corkery, part owner of the Donovan & Corkery Logging Company of Aberdeen, Wash., brought out the fact that the presence of pulp and paper mills always raises the current prices of hemlock.

"The pulp mills' absorption of hemlock makes a considerable difference in the spread of log prices," says Mr. Corkery. "Take conditions on Puget Sound, for instance. The numerous pulp mills up there have brought the price of hemlock on the Sound above our price down here. That is the reason loggers up there are able to move their hemlock as freely as they do. Even down here, with only one pulp mill, we have already noticed the difference in the price of hemlock. It used to be that the spread between No. 3 fir and hemlock favored the fir. Now there is no such spread. Hemlock brings $8 per M; you can't get that for No. 3 fir."

Uses of Cellulose Other Than For Paper*

By EDWIN C. JAHN**

INTRODUCTION

BEFORE this group it is unnecessary to enumerate the many products made from cellulose nor to go into details concerning their manufacture. Many popular articles have appeared describing the versatility of this raw material, and we have read from time to time that this is the "Age of Cellulose"—if it is possible that any one material can be the basis for our modern complex civilization.

Although pictures of the great variety of cellulose products are inspiring and accurate they are apt to lead to certain fallacies. Among the uninformed cellulose appears to be convertible to our every need, and chemists are looked upon not as research workers but as miracle workers. It is true that our modern cellulose products are extensive, but they are the fruit of years of painstaking research, and even yet the nature of the cellulose molecule remains problematical.

This discussion will be confined to a brief outline of, first, the major or fundamental manufacturing processes using cellulose; second, the constitution of cellulose and its relation to the products formed, and finally, the indications for and against an expansion in the use of wood cellulose.

Although cellulose finds many uses in the "unliberated" state, such as in lumber, in wood distillation, and in hydrolysis and fermentation, these uses will not be considered here. We will take up only the uses of cellulose from any plant source in the pure or relatively pure state.

PROCESSES FOR THE MANUFACTURE OF CELLULOSE PRODUCTS

The fundamental processes underlying cellulose products are relatively few: (1) delignification or liberation of cellulose fibers, (2) solution and regeneration of cellulose, and (3) esterification or etherification of cellulose. The first method provides pulp for paper, fiber boards, vulcanized fiber and a raw material for the second and third processes just mentioned. The viscose, cuprammonium, and nitrate methods of synthetic silk manufacture come under the second process. The cellulose acetates, nitrates, and ethers are the result of the third process.

These last two basic processes underlie the manufacture of synthetic fibers, cellophane, films, lacquers, cellulose plastics and the cellulose nitrate explosives. They are the foundations for most of our cellulose products other than paper. Of practical importance is their growing relation to wood cellulose.

*Presented before the Fall meeting of the Pacific Section of the TAPPI at Powell River, B. C., Oct. 23, 1931.

**Assoc. Prof. Forestry, University of Idaho

REGENERATED CELLULOSE PRODUCTS

Viscose Process. In 1893 Cross and Bevan discovered the viscose process, which continues to be of prime importance for the manufacture of synthetic fiber. They found that when cellulose was impregnated with a mercerizing solution of caustic soda, and then treated with carbon bisulphide, it became soluble in water as a thick yellow syrup. If this viscous solution is kept or "ripened" and then passed into solutions of certain salts or acids the cellulose is regenerated in a modified form.

Cross and Bevan considered using viscose solutions for coating fabric fibers, and it remained for others to apply the process to film and fiber manufacture.

In rayon manufacture the viscose solution is ejected through spinnerets into the precipitating bath. Each spinneret, usually made of gold-platinum alloy, is a flat cup of about the size of a thimble and has a number of fine openings (0.09 mm. diameter) varying approximately from 10-40 in number. Each opening forms a filament and all the filaments from one spinneret are united to form a thread.

Through mechanical invention the viscose process has become versatile. Thus if the viscose is pressed through thin slits we obtain cellophane sheets, uses for which are rapidly expanding. Artificial straw braid and horeshair are also made, used for millinery and upholstery, respectively. Artificial wool from rayon is not yet a complete success because the fibers are too smooth. Seamless regenerated cellulose tubes for sausage casings are successfully produced. Fruit is sometimes given a continuous cellulose coat by a dipping process. There is every prospect that the viscose process will be turned to still further uses.

Cuprammonium Process. A second method for the manufacture of regenerated cellulose synthetic fibers is Pauly's method in which 5-10% of cellulose is dissolved in Schweitzer's reagent (cuprammonium hydroxide) and regenerated in an acid or caustic bath. During coagulation the threads are subjected to tension which stretches them, producing fine filaments. These filaments are also known under the German word Glanzstoff, meaning lustre silk. The Pauly process is especially adapted for finer filaments and it is possible to produce them 2.5 times finer than true silk. It requires more than 4,225 miles of one of these filaments to weigh a pound. Cuprammonium silks have a greater resistance to water than other synthetic fibers and hence have greater wet strength. These properties overcome the disadvantage of high manufacturing costs.

Nitrate Process. The oldest method of synthetic fiber manufacture is that employing cellulose, esterified by nitric acid and then regenerated as a modified cellulose.

Briefly the method consists in nitrating cotton cellulose with a mixture to form cellulose nitrates. After

washing, the cellulose nitrate is dissolved in equal volumes of alcohol and ether, aged, and then pressed through fine capillaries into a current of air which removes the solvents and leaves a filament of cellulose nitrate. Cellulose nitrate is exceedingly inflammable so that it must be denitrated.

The nitrate process produces a lustrous fiber, but because of the operating risks due to inflammability, expense of operation, and difficulty in effecting complete denitration, the method appears to be losing ground.

CELLULOSE ESTERS AND ETHER PRODUCTS

Cellulose Acetates. Cross and Bevan were the first to prepare cellulose acetate. They heated cellulose with acetic anhydride at high temperatures. When the reaction is carefully carried out a pure cellulose triacetate is formed, the three available hydroxyl groups in cellulose being occupied by acetate groups.

The general commercial practice is to acetylate with acetic anhydride containing sulfuric acid or sulfur dioxide as a catalyst, and in the presence of glacial acetic acid to dissolve the triacetate produced. The solution containing the triacetate is then diluted with water until the glacial acetic acid and the anhydride have been converted to acetic acid of 90-95% strength. On standing 10-12 hours, partial hydrolysis occurs producing a mixture of acetates approximating the diacetate. This step is necessary in order to produce an acetone soluble product. The acetic acid solution is then poured into water which precipitates the cellulose acetate. This is washed and dried.

For the production of fiber, the cellulose acetate is dissolved in acetone, the solution filtered, and ejected through spinnerets into a warm air current which removes the solvent leaving a cellulose acetate filament.

The non-inflammability of cellulose acetate is one of its most important properties. This led to its development as a lacquer for airplane surfaces during the war. It is also used to a small extent to produce safety film, and for toys and wrappers.

It is stated that in France considerable amounts of this ester are used for safety glass. Its stability to sunlight and heat are favorable properties for this use, but its poor adhesion and brittleness argue against it at present.

The toughness, water resistance, heat resistance and easy thermoplastic production of translucent or mottled products are propetries of cellulose acetate which make it suited for plastics. This field is limited only by the difficulty of finding a suitable platicizer.

The production of cellulose acetate fiber, also called celanese, is by far the most important of the cellulose acetate industries. The growth of this industry is very recent and rapid. The U. S. A. production has risen from less than 0.5 million pounds in 1924 to over 7 million in 1929, and with 10 million pounds estimated for 1930. For plastics and films about 0.5 to 1 million pounds were used in 1929.

Cellulose Nitrates. The cellulose nitrates were the first cellulose derivatives to attain any important commercial use. Braconnot in 1832 was the first to make cellulose nitrate, but it remained for Schonbein in 1846, who independently prepared cellulose nitrate, to actually put it to technical use as an explosive.

Distinction must be made between two classes of cellulose nitrates,—collodion cotton or pyroxylin, and gun cotton. The former is a mixture of mono-, di- and tri-nitrates containing between 10.7-12.4% N. It is used for films, lacquers, plastics, and for the nitrate silk process already described. Gun cotton is a mixture of nitrates containing over 12.5% N, approaching the tri-nitrate. Collodion is soluble in ether-alcohol, whereas gun cotton is not.

Pyroxylin or collodion cellulose nitrate finds a large and growing use for lacquers, photographic films, plastics (celluloid), safety glass and artificial leathers. Slight variations in nitrogen content and viscosity cause considerable changes in properties. By using a standard viscosity test it is possible to classify the cellulose nitrate for its most suitable use. For example, low viscosities are best suited for various types of lacquers, the higher viscosities for artificial leather, waterproofing compounds, airplane dopes, gas mantles, belt and film cements, and other products. The different properties are produced by the type of cellulose used, and by variation in nitration and purification processes. It is a comparatively recent development (1919) that a sufficient knowledge of viscosity characteristics has been obtained to allow the manufacture of a cellulose nitrate below a limiting viscosity, and this discovery marked the beginning of the modern lacquer industry.

Cellulose Ethers. The practical use of cellulose ethers is still largely in the experimental stage. However, a review of the recent patent literature reveals increasing interest in these products. The ethyl and benzyl ethers seem particularly promising and they are reported producable at costs which may soon enable them to compete with the cellulose esters.

Various other cellulose esters are also being investigated, such as the formates, propionates, butyrates, benzoylates, and mixtures of these with ethers, producing mixed cellulose ester ethers.

These various compounds are reported suitable for synthetic fibers, lacquers, films, phonograph records, etc.

THE CONSTITUTION OF CELLULOSE AND ITS RELATION TO THE PRODUCTS FORMED FROM IT

This paper is not the place to enter into a discussion of the constitution of cellulose. However, it is desirable to point out a few examples which indicate how intimately the properties of certain cellulose products are related to the physical and chemical nature, and to the purity of the cellulose originally used.

The term "pure cellulose" is ambiguous, since we lack the usual criteria for the judgment of its purity. Cellulose must be isolated as a residue by delignification or purification. It cannot be crystallized, has no sharp melting point, nor exhibits any of the properties enabling its isolation and identification by the usual organic chemistry methods. The chief difficulties in our study of cellulose are that it is not macro-crystalline and that it shows colloidal behavior in solution. Furthermore, different methods of isolation and different means of purification cause appreciable variation in certain of its properties, as, for example, viscosity in cuprammonium solution.

There are, however, certain definite facts which we know regarding cellulose and which appear to be constant for all purified "celluloses".

Although we may accept the hypothesis that cellulose from all sources is one and the same chemically, there are nevertheless certain differences between cotton and wood cellulose which apparently are mostly physical or physical-chemical. These differences cause considerable variations in certain cellulose products depending upon whether they are made from cotton or wood. Synthetic yarns from different celluloses are not identical in their properties, the physical characteristics of cellulose films vary somewhat with the kind of cellulose used, and there is a difference of opinion as to the relative stabil-

ity and degree of nitration of wood nitrocellulose as compared with cotton nitrocellulose.

The water absorption values obtained for isolated wood cellulose differ from those obtained for cotton cellulose.

The most marked difference between cotton and wood cellulose is in the viscosity of their solutions or solutions of their esters. There is a direct relation between the viscosity of cellulose in cuprammonium solution and that of their ester derivatives. Furthermore, the viscosity of both cellulose and of cellulose ester solutions can be reduced in a number of ways as by heat, by alkalis, acids or oxidizing agents. Also cellulose isolated or purified by different methods exhibits differences in viscosity. It seems most probably that these facts are bound up with that of the molecular or aggregate size of cellulose or the arrangement of the micellae in the fiber. Purification, isolation, or chemical action can apparently vary the molecular status. Thus, it is probable that the drastic methods of isolation of wood cellulose have an effect upon the molecule or aggregate size; e. g., wood cellulose **in situ** may or may not be identical with cotton cellulose.

Recent experimental evidence on the molecular size of cellulose indicates the correctness of some of the above ideas.

INDICATIONS FOR AND AGAINST AN EXPANSION IN THE USE OF WOOD CELLULOSE

The factor which dictates the use of a raw material for new industries or its expansion in competition with other materials in established industries is largely one of economics. This discussion will not enter into the economics of the case, but will merely indicate some of the trends as well as some of the possibilities which may operate for or against an expansion in the use of wood cellulose for purposes other than paper.

First let us consider some of the possible factors which may decrease the use of wood cellulose. Some of these are purely speculative, others are now competing with pulp. Among the latter is cotton.

Cotton has certain obvious advantages over wood cellulose. It contains 95% alpha cellulose, is easy to purify and process, and does not contain small amounts of mannan and pentosans as does alpha wood cellulose. Cotton has maintained supremacy in the cellulose nitrate and other ester industries, but supplies only about 1/3 of the raw material for the viscose process in the United States. It is pointed out, however, that the cheaper short fibered cotton is as suitable for the cellulose industry as the longer fibered expensive cotton. It may be possible to bring the average yield per acre from 165 pounds to 500 pounds for this material.

Competition from agricultural wastes has often been held as a menace to the wood pulp industry, particularly for fiber board and paper manufacture. Success has been attained in the manufacture of certain wall and insulating boards from straws and sugar cane residue. There is no doubt but that for fiber boards and even for paper in certain areas (despite the recent failure of the cornstalk paper plant in the mid-west) we may expect more or less competition with wood pulp.

There are several obvious advantages of wood over annual crops as a source of cellulose. They are:

(a) Low yield and poorer quality of fiber as compared with wood. Wood fiber has invaded the field of high grade papers and also the rayon field.

(b) Low per acre yield of annual crops. Compared with 100 lbs. of 1st grade cellulose from flax and 165 lbs. of cotton there is an average annual increment of wood growth in managed forests yielding 2000 lbs. of cellulose per acre.

(c) Ease of transportation and storage of wood, its resistance to decay, ease of handling, and digester output as compared with field crops.

(d) Crops must be harvested annually, involving storage and decay difficulties. The collection of the material involves many small producers. Wood has no forced harvesting. Also it can be grown on a large scale, the transactions passing but few hands.

Furthermore, cheaper pulping processes for wood are making possible the cheap production of crude wood fiber, which in the form of fiber boards compete with any similar material made from agricultural wastes.

Entering into more purely speculative considerations, we may find that new processes in the future may compete with wood pulp. For example, if it were possible to dissolve out directly, or otherwise remove cellulose from wood, for the viscose and cellulose ester industries, dust and wood waste could be utilized for this purpose.

Another fascinating piece of speculation is the possibility of producing synthetic cellulose from carbon dioxide and water or from other sources. This possibility has been given new life by the papers of Hibbert at the Buffalo meeting of the American Chemical Society in September. Hibbert described the synthesis of cellulose from glucose and then the production of synthetic textile fibers from the synthesized cellulose. Such an accomplishment is of great theoretical interest and may serve as a means for the better understanding of the cellulose molecule.

Even though it may be possible to produce synthetic cellulose, it will have to compete with our reserves of naturally grown cellulose at hand. Better forest management and improved pulping processes will continue to cut down production costs.

The development of new processes and new products from cellulose will of course increase the market for wood pulp. However, pre-genital processes offer little basis for discussion. But experimental evidence indicates certain developments in existing processes which are of importance.

Perhaps the most promising development is in the production of high alpha fiber for rayon and other chemical cellulose products. The recent patent literature on alpha-fiber is appreciable, and numerous general articles on the subject have recently appeared.

The basis for the purification of wood pulps is a mild alkaline treatment, usually with heat. Most of the patents rely on this treatment and differ only in details. In some cases an oxydizing or bleaching treatment is also used. High alpha kraft pulps (up to 97%) have been obtained by treatment with alkaline oxidizing (bleach) solutions.

Alpha pulps containing as high as 98% alpha cellulose, and thus comparable to cotton, have been prepared. Wood alpha pulps, however, show a lower viscosity than cotton cellulose. This, as previously pointed out, is probably due to the drastic chemical treatment given wood cellulose.

Wood pulp has already entered the rayon field. Here, however, a comparatively large latitude in cellulose content and purity is allowable. Yet, with an improved purity of wood cellulose a better rayon at lower cost is producable. The manufacture of such improved alpha cellulose will probably increase the use of wood cellulose in the rayon industry.

The specification requirements for cellulose for the cellulose nitrate industries are far more stringent than

(Turn to page 32)

The Canadian News Print Merger—

How Will It Affect the Pacific Coast?

THE Pacific Coast region is likely to be affected only indirectly by the proposed super-merger of eastern Canadian newsprint mills. If the new consolidation materializes—and there is ground for doubting this—British Columbia mills will not be included in the new setup.

Powell River Company, a leading newsprint producer on the west coast, is still one of the most independent units in the industry, and its owners are not even considering amalgamation. There have been rumors of a consolidation affecting Pacific Mills, Ltd., the other British Columbia newsprint organization, but that would be independent of the eastern Canadian merger plan. Pacific Mills is the Canadian subsidiary of Crown-Zellerbach Corporation, which is being mentioned in unsubstantiated merger rumors.

"Newsprint is a world commodity and while the west Coast is a zone unto itself and our markets out here are different from those of the east, we are bound to feel the effects of a big eastern merger," said a British Columbia newsprint operator when questioned by PACIFIC PULP & PAPER INDUSTRY. "Price may not be the sole reason for the suggested merger, but it is certain to be one of the major considerations and when prices are changed in the east, there is usually a reaction in the west, eventually."

Banks are Pressing

If through consolidation the eastern mills are able to reduce costs of operation and distribution, their product may become a more direct competitor to the Pacific coast, in the view of some newsprint men. Because of that possibility the merger question is a matter of lively interest.

The chief interests pressing for the merger are the Canadian banks. The eastern Canadian mills are "into" the banks to the extent of some $40,000,000, and these heavy borrowings have given the impetus to the present discussions. E. W. Beatty, president of the Canadian Pacific Railway, has entered the picture as one of the chief pro-merger figures, and he and several of Canada's leading bankers have held a series of conferences looking to the proposed super-merger.

If the merger is achieved it will be the most important example of economic wedlock in Canada since the creation of the Canadian National Railways. The prospect is that it would bring under unified control 80% of Canada's newsprint productive capacity. While all previous attempts at unification have been aimed primarily at price control, there is a much wider view behind the present discussions. The chief objectives are simplification of the involved financial setup in the industry and the lowering of overhead costs.

Certain mills in the industry are especially adapted for certain types and scales of production. A small mill, for example, may be more efficient at 50% of capacity than a large one, though at 80% of capacity the latter becomes the cheaper producer of the two. The smaller mill may work more economically on a diversified batch of small contracts; the larger one gets into its stride on a mass production basis. At present these two mills may be competing for whatever business they can find. Under unified control each would get the type of order it could most efficiently handle.

Unified control would permit simplification of pulpwood operations. The manufacturing end of the business could be concentrated for convenience. The ultimate result would be expressed in lower cost of production.

Hitherto attempts at a super-merger have failed largely because of the lack of proper sponsorship. While feeling the need for some closer form of co-operation, the desire of the operators has been to get the best deal for their individual companies.

Wide Control

Negotiations have not yet reached the point where values can be discussed. All that has been arrived at is an agreement to merge. Needless to say it is a gigantic problem and one that makes even the complicated and extremely difficult reorganization of Canada Power & Paper into Consolidated Paper seem like child's play.

	Capacity per day, tons
Canadian International Paper Mills	
Three Rivers, P. Q.	735
Dalhousie, N. B.	500
Gatineau, P. Q.	683
E. B. Eddy (interest in)	127
Abitibi Power & Paper Mills	
Murray Bay	120
Ste. Anne	275
Sturgeon Falls—Espanola	730
Sault Ste. Marie, Iroquois Falls, Smooth Rock Falls	600
Fort William	160
Manitoba Paper	250
Consolidated Paper Corporation Mills	
St. Maurice	263
Belgo-Canadian	642
Laurentide	389
Wayagamack	170
Port Alfred	500
Thunder Bay (joint control with Abitibi)	246
St. Lawrence Paper Corporation Mills	
St. Lawrence	460
Lake St. John	252
Brompton	239
Price Bros. & Co. Mills	
Jonquiere, Kenogami, and Riverbend	1,020
Donnaconna (controlled)	240
Minnesota and Ontario Paper Co. Mills	
Great Lakes	314
Fort Francis	283
Kenora Paper	252
Total tons per day	9,204

The merger, it is felt, would be ineffective unless it could control the greater percentage of Canadian production. The Pacific coast mills are counted out, but

several other mills would similarly be left out, too, under ordinary circumstances. Ontario Paper Company, for instance, is controlled by the Chicago Tribune and would not be interested. E. B. Eddy & Company produces so many other lines besides newsprint that it might prefer to remain independent. Spruce Falls Pulp & Paper is owned by New York Times and the Kimberly Clark Corporation, and is thus in the same position as Ontario Paper. Several other smaller mills would similarly not be interested in the new combination.

The field proposed for consolidation is about as set forth below:

There are, however, several strong influences working against the proposed merger. One of them is the feeling that a further consolidation of the newsprint mills would make it appear that a monopoly was aimed at, and this might lead to a sacrifice of whatever goodwill there may exist between producers and publishers. There is also the feeling that while costs might be reduced by a reduction of overhead it would also mean the elimination of competition, which has been one of the surest guarantees of efficient operation.

The future atttitude of the Canadian provincial governments is also important. Ontario and Quebec might hold back in granting new timber leases for many years, but British Columbia and the maritime provinces probably would feel no obligation to do so; in fact, there is every reason to suppose that if a large newsprint organization desired to enter the British Columbia field at this or any other time, it would have the full cooperation of the government.

Then there is the attitude of the investor to be considered, and security holders would probably be affected both beneficially and adversely by the merger. There are many responsible authorities who believe that the Canadian newsprint industry is already over-merged and already numbers too many unwieldy units. These feel that the only sound course is for the industry to find out where there is inefficiency; where there is reasonable bond or share capitalization and where there is water. With all these considerations still to be disposed of, the merger can not be regarded as an immediate prospect.

International Paper Third Quarter Earnings

International Paper and Power Company for the third quarter, reports net revenue, of $10,720,409, compared with $9,724,119 in the third quarter of last year. After deducting depreciation, interest, dividends on preferred and minority common stocks of subsidiaries, and all other prior charges, the balance added to surplus in the third quarter was $264,297, compared with $974,874 in the corresponding quarter a year ago.

For the first nine months net revenue was $31,203,867 against $30,471,610 for the first nine months of last year, and balance added to surplus was $1,871,294. compared with $2,245,985 in the corresponding period of 1930.

Operations this year to date, excluding New England Power Association (whose earnings have declined due to the business depression and to the burden of carrying charges on newly provided facilities not yet fully used) have shown about the same earnings as last year notwithstanding very heavy declines both in volume and prices. This showing has been made possible by the reductions in costs resulting from improved efficiency and economies. Stabilization of prices and improvement in business should, therefore, bring with them largely increased earnings in both the power and industrial divisions of the business.

Present indications are that earnings for the last quarter will cover the quarterly accrual on the dividend. This, however, is due in part to the upward seasonal swing that normally takes place in the fourth quarter, and under present business conditions the management feels that it is not advisable to consider the resumption of dividends on the preferred stock in the immediate future.

European News Print Exports Gaining

British Columbia and other Canadian newsprint companies are finding out the bitter truth of the adage that "all is not gold that glitters." Though demand for newsprint has been on a lower basis than in 1930, it was suggested that the loss in business would be made up by the premium on New York funds, which the Canadian producers receive on sales made in the United States.

This line of reasoning is likely to be somewhat misleading for the simple reason that while Canadian funds have depreciated in value, the decline in currency values of those European countries exporting newsprint to the United States has been even greater. Scandinavian producers have not been slow to take advantage of the situation and trade returns clearly show that they are securing a larger share of the American newsprint market.

During the first nine months of 1930, the United States imported 1,679,610 tons of newsprint from all countries. For the corresponding period of the present year imports have declined to 1,542,361 tons.

In the current period imports from Canada declined approximately 160,000 tons. Newfoundland purchases were a trifle larger, while European buying showed an increase from 97,034 tons to 114,467 tons. This is clearly shown in the following table:

	Nine Months —Tons—	
	1931	1930
Finland	37,183	31,420
Germany	16,723	9,422
Norway	9,828	6,609
Sweden	50,698	49,583
Other countries	35	
European total	114,467	97,034
Newfoundland	111,498	109,375
Canada	1,316,396	1,473,201
Total	1,542,361	1,679,610

The above table does not tell the full story as far as tonnage is concerned—the European shipments appear small, but on a percentage basis the trend upward is significant. It is estimated that some 50,000 tons of European newsprint will be landed on the Pacific Coast in 1931.

Powell River to Get Highway

The British Columbia government has decided to proceed with construction of a highway connecting Vancouver with Powell River, where the Powell River Company's mills are located. Completion of this road link will be an important development for the company, as the town is now isolated from the rest of the world except by water or air route.

L. W. Killam, president of the B. C. Pulp & Paper Company, Vancouver, has been elected president of the Japan Society of Vancouver. Mr. Killam is a frequent visitor to the Orient and his company is one of the most important shippers of pulp to Japan on the Pacific Coast.

W. P. Hawley, Sr., Passes On

W. P. Hawley, founder and former president of the Hawley Pulp & Paper Company at Oregon City and former president of the St. Helens Pulp & Paper Company, St. Helens, Oregon, and the California Bag & Paper Company of Emeryville, Calif., died December 1 at his home, 400 East 22nd Street, Portland, at the age of 75. He had been in poor health for some time.

His industrial career in the Pacific Northwest was intimately inter-woven with the development of the pulp and paper industry and with the general industrial development of the country, and this was evidenced by the pallbearers chosen to perform a last service for him. The list of honorary pallbearers included John S. Coke, Mayor George L. Baker, Joseph Peters, W. S. Haivor, Franklin T. Griffith, Phil Grossmayer, and Cassius R. Peck of Portland; John Clark and Will Huntley of Oregon City, and Max Oberdorfer and Hamilton McCormick of St. Helens. Active pallbearers included Theodore Osmund and Dr. Karkeet of Portland; William Kelly, Eber Chapman, Lionel Malley, Dr. Guy Mount and Robert Peters of Oregon City, and Irving T. Rau of St. Helens.

Steady in 1932, Says Brown

"I do not look for much new development during 1932 which would provide 'boom' times, states Bruce Brown, Vernon division Fibreboard Products, Inc. "The regular demand for such staples as butter, egg, soap, and clothing boxes which we manufacture at Vernon will keep next year nearly normal in my opinion.

"Also, I do not think that we will have to cut our employes' time down much, if at all during the next year, as it is my opinion that our five-day week running schedule will be ample. Another favorable factor for us at Vernon is at no time did we over expand our capacities, which made it unnecessary for retrenchment."

Hopes Held Higher

Some improvement in the business situation is seen by members of the paper industry in Portland. Ray Smythe, returning from a tour of Northwest mills, reports a somewhat better sentiment despite the fact that there is little concrete change in the market situation. The Scott-Hosfeldt Company reports 20% less past due accounts on its books, and takes this to be a sign of better times. The Spaulding mill reports that it has enough business to keep it operating at capacity in December, although prices are low.

Donald Buchanan, formerly with Hawley Pulp & Paper Company at Oregon City in the sulphite department, has joined the staff of the new Weyerhaeuser Timber Company mill at Longview, Washington. He is employed in the same capacity as he was at the Hawley plant.

Business Somewhat Better In Colorado

An upturn in general business is reported by the paper houses of Denver for November. Particularly the increase has been noted in the country districts. The balmy weather prevailing right up to Thanksgiving left little thought of the approaching holidays in the minds of purchasers. The heavy snow on November 21 served as an immedite incentive to holiday thinking with resultant increased purchases. The paper sales serving as a barometer for general business really indicate a long delayed upturn is approaching. The eleven million dollars recently paid beet growers in Colorado has also served as a stimulus.

Here's a picture left over from the recent meeting of the Pacific Section of TAPPI held at Powell River on October 23. Who told the story or what it was has been lost in the records, but its very evident that Bert Killien, Powell River's boss paper machine man (left) is having a laughing contest with Ray Smythe, of Portland, manufacturers' representative. Or maybe Killien is laughing at Smythe's pink whishers. The photographer was U. A. Keppinger of the Griffith Rubber Mills.

Pacific TAPPI Notes

Among the new members of TAPPI announced by National Secretary R. G. Macdonald are James F. Brinkley of Seattle, and T. J. Waltmon of Portland. Mr. Brinkley is vice-president of the Webster-Brinkley Co., Seattle, manufacturers of power transmission and materials handling equipment. The company has been active in making installations in a large number of Pacific Coast pulp and paper mills. Mr. Waltmon is the Portland branch manager of the Simonds, Worden, White Co., of Dayton, Ohio.

Lyman Smith, who was formerly manager of the Crown Willamette Paper Company's paper mill at Camas, Washington, and who, for the past year or more has been in the East, is now heard from in his new connection as general superintendent of the Cherry River Paper Company at Richmond, W. Va.

N. W. Coster of the Puget Sound Pulp & Timber Company, Everett, has been approved pulp testing chemist by the joint committee representing the A. P. P. A., A. A. W. P. I., and TAPPI.

That Trade Street Squabble

Local skirmishes continue to center around that 40-foot strip of land adjoining the 110-ton bleached sulphite specialty paper mill of the Oregon Pulp & Paper Company at Salem, Oregon. The strip of land, known as Trade Street, first figured in Salem politics when the paper company asked that it be vacated so that necessary building additions could be made. There was opposition from some parts of town, rather bitter opposition. But the city council eventually vacated.

Recently some elements have been pressing to force the paper mill to build on the vacated property. Served with an ultimatum by the council to build within 90 days, the paper company has declared its intention to deed the property back to the city.

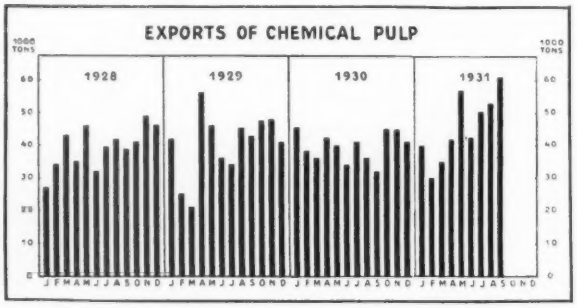
Mielke Active in Columbia River Program

O. W. Mielke, Northwest president of Blake, Moffitt & Towne, represented the Portland Chamber of Commerce on a conference at Spokane December 3 on the proposed vast development of the Columbia River. The meeting was planned for the purpose of harmonizing the various interests in the development before it goes before congress for appropriations at the forth-coming session.

Finland Pulp Exports Growing

One of the significant developments during the year has been the expansion of chemical pulp exports from Finland. Despite wholesale curtailment of production in world industry, ships calling at Finland's ports have been taking away greater cargoes in 1931 than ever, not excepting the boom year of 1929.

Finland in 1929 exported a total of 484,142 metric tons of chemical pulp. In 1930 chemical exports declined slightly to 475,828 tons. When figures are in



Exports of Chemical Pulp from Finland

for the last quarter of 1931 it is believed that total chemical pulp exports for the current year will be substantially in excess of the previous two years. For the first nine months chemical pulp exports were 410,878 tons, as against 345,340 tons and 347,763 tons for the same periods in 1930 and 1929 respectively.

Finland is a small country, consuming only a small portion of its pulp and paper manufactures in its domestic market. England is a very important customer of Finland's, but a more and more extensive market for Finnish chemical pulp has been found in the United States in recent years. The accompanying chart shows the trend of Finland's exports in the last three years.

Fir-Tex Meets—But That's All

Directors of the Fir-Tex Insulating Board Company met in Portland December 1 but, according to Judge John S. Coke, secretary, there was no change in the situation after the meeting. Charles E. Dant remained chairman of the executive committee, and H. F. McCormick, president, and there was no change in the directorate.

Nothing was done about the rumored change in management, A. E. Millington continuing in charge. Nor was anything done about starting the mill up again, as there is no market at present for the product. The mill has been down since July. Nothing was done about finding a new name for Fir-Tex in keeping with a recent patent court decision, as no advertising is being done on the product.

Now at the Bottom

"Recent business news would seem to indicate that the bottom of the depression has been reached," recently stated Nancy Baker Tompkins, Nancy Baker Tompkins Advisory Service for Paper Users, Los Angeles. "Here in Los Angeles there seems to be a generally better feeling and all indications point to a revival of trade in 1932.

"People are beginning to realize that a great deal of the ill effects of the depression are due to a state of mind and are letting up in self defense."

Rainier Winds Up Oyster Problem

Final instruments were filed with the Mason County auditor in November completing the settlement of the Rainier Pulp & Paper Company with oyster interests of the Puget Sound country in the vicinity of Shelton, Washington. With the filing of these instruments the pulp mill company is discharged from all claims for damage and is given consent to the disposal of clear liquid waste waters into the adjacent bay. The cases were dismissed in federal court in consideration of the agreement.

Previous claims had been settled with a rally fund which had been subscribed by Shelton citizens and their friends to preserve the industry for the community.

White Fir—An Excellent Pulpwood

A considerable quantity of white fir logs was used in the first pulping operations at the new mill of the Pulp Division of the Weyerhaeuser Timber Company, which went into operation in mid-November. The wood produces an excellent quality, high strength pulp.

White fir has been a "weed" as far as the logger is concerned in meeting a sawmill market, and many hundreds of thousands of cords of sound wood have been left in the forest in the wake of normal logging operations. Only in recent years has the real merit of the specie been appreciated. The supply of white fir in the Pacific Northwest is smaller than that of Western Hemlock and Douglas Fir, but quantities are sufficient to warrant separate treatment.

McDowell Appointed Bank Receiver

George M. McDowell, Portland paper mill promoter, has been appointed by the circuit court as receiver for the Prudential Bancorporation, holding company for the Prudential Savings & Loan Association, the Union Savings & Loan Association and the Federal Union Savings & Loan Association. He was appointed on petition of State Corporation Commissioner Mott, who is in statutory possession of the three associations, following investigation of their activities.

Norman Kelly Assistant Superintendent at Weyerhaeuser

In a previous issue it was stated that Robert Heuer had joined the Pulp Division of the Weyerhaeuser Timber Co., at Longview, as assistant to the general superintendent. It should have been stated that Mr. Heuer is a shift foreman in the new mill. The assistant to General Superintendent Ben Larrabee is Norman Kelly.

Lester David in New York

Lester W. David, promoter and builder of the Ocean Falls, B. C. mill, and who has been in Portland and the Pacific Northwest for the past several months working, it is understood, on a kraft pulp and paper mill project, left for New York the end of November. Nothing is known of what he expects to do in the East, but he has left word that he expects to be back by Christmas.

W. C. Bryan, Collins Manufacturing Company, Holyoke, Massachusetts, manufacturers of index board, ledger and writing paper, was a recent visitor to the Los Angeles trade.

Henry Burgee, Parsons Paper Company, Holyoke, Massachusetts, recently visited the Los Angeles paper trade.

2+2=Most Anything

Einstein's Help Sought on Problems of Paper Mill Traffic Manager

Pity the poor Pacific Coast paper mill traffic manager. He has just finished explaining to the boss and the sales department what the Interstate Commerce Commission decision in the 15% railroad rate case meant, and now the commission has pushed up the effective date from May 11, 1932, to November 10, 1931, on as pretty a puzzle as any rate shark ever tore his hair over—some nice new Pacific Coast rail rates based on some nominal and non-existent water rates. In other words, the I. C. C. decision in the Fourth Section application.

The situation shapes up something like this, as nearly as the traffic managers can explain it between alternate chills and sweats:

The coastwise steamer lines, fighting tooth and toenail for business, used to name most any rate they liked, or rather that the shipper liked, to grab off a bit of tonnage. Then they got together in conference—that is, the leading lines did—and published some rates that all were to adhere to in theory. These rates cut in pretty heavily on the rail rates and the rail business, so the railroads by special permission did a little rate revising on their own hook and published some special rates based on water competition. Then application was made to the commission for permission under the Fourth Section to publish permanent port to port rates without disturbing intermediate rates, to meet the water competition.

The commission rendered its favorable but puzzling decision April 17, 1931, to become effective in September, but postponed the effective date to May 11, 1932, when the steamship lines squawked for a hearing. After denying the hearing the I. C. C. hopped up the effective date to November 10, 1931.

The new rates, said the commission, should be based on the conference rates put out by the standard coastwise steamship lines, these being specified as the Pacific Steamship Company, McCormick Steamship Company, Nelson Steamship Company and Los Angeles Steamship Company. The rail rates must be not less than 9 cents higher than the class rates of the standard ship lines publishing the lowest class rates.

The reasons the I. C. C. finds for this differential are many, the railroads offering the shipper many advantages not afforded him by the steamers. On the other hand, the steamship lines have certain little things to offer the shipper that the railroads can't give him.

At any rate, the way it works is like this: The published water rate on news print from Portland to San Francisco is 20 cents, therefore the new rail rate is 29 cents, a nominal differential of 9 cents, which is all very pretty. But there is actually in effect an unpublished water rate of 16¼ cents, so the real differential is 12¾ cents.

The Southern Pacific special tariff 729 gave Oregon City a 33-cent carload newsprint rate to San Francisco. This tariff is wiped out by the decision and the new Oregon City rail rate to San Francisco is a combination based on Portland—6 cents to Portland, 29 to San Francisco, total 35 cents. But that isn't all by a long shot. The Oregon City mill can't just pay that 6-cent backhaul charge to Portland and ship out direct to San Francisco, because the S. P. rate to Portland is 7 cents—that 6-cent rate is in effect only over the P. E. P. electric line, so the carload of newsprint must go to Portland over one road and then back out through Oregon City on its way to San Francisco over another.

The mills at Salem and Lebanon are in an even worse fix on San Francisco shipments. They both had 33-cent newsprint rates on the old S. P. tariff. Now the best rail combinations they can figure out are 43 cents for Lebanon and 41 cents for Salem.

The decision has shot the old rate structure all to pieces. For example, the former newsprint rate from Oregon City to Bakersfield was 68 cents and the same rate applied on wrapping paper. The new rate on news is 63 cents; the new rate on wrapping 70 cents.

The decision affects directly rates between San Francisco, Los Angeles, Wilmington (or Los Angeles Harbor), and San Diego on the one hand and on the other Portland, Tacoma, Seattle, Anacortes and Bellingham. The same rates are named from Los Angeles as from Los Angeles Harbor, which is an innovation.

In some instances Puget Sound rates to the California ports are actually lower than the Portland rates to the same ports. The reason for these discrepancies is the unsound basis of water rates manufactured to divert tonnage from the rail lines.

One net result of these new rates, in the opinion of C. B. Richards, traffic manager of Hawley Pulp & Paper Company, will be loss of business for the railroads. He cited for an example the wide margin between the newsprint rail rate of 35 cents Oregon City to Portland as against a rail and water combination of 23½ cents. The Oregon City mill can ship newsprint, wrapping paper and bags to Sacramento via rail and water for 32½ cents, but the best all rail rate available under the I. C. C. decision is 53½ cents.

The decision affects all the coast mills and Richards expected it to be the subject of considerable discussion at the Pacific Coast Pulp & Paper Traffic Association meeting in San Francisco, originally scheduled for December 7, but postponed until December 14. Chairman is J. J. Seid, traffic expert for Crown Zellerbach Corporation.

The traffic men will be doing well if they unscramble the I. C. C. decision and the new tariff sufficiently to know what it is all about. The railroads are authorized by the decision to lower and raise their terminal rates, if desired, to bring them into line with whatever changes are made in published water rates, all in keeping with a flock of restrictions.

Richards looks for some revision of the rail rates or the publication of a new S. P. tariff to take care of the intermediate points. Otherwise the railroads are going to be out of luck for paper mill tonnage and the mills are going to have a tough break.

Uses of Cellulose

(Continued from page 26)

for viscose. The principal objection to wood cellulose for pyroxylin seems to be its physical character, yet means might be devised for overcoming this objection. The lower viscosity of wood alpha cellulose should not be objectionable for pyroxylin, but on the contrary should be a favorable property. The low viscosity type of cellulose nitrates for lacquers is the basis for most of the lacquer products. Lacquer films made from high alpha wood pulps have been shown to have equal qualities with those made from cotton.

It appears that research on the improved quality of wood cellulose in relation to lacquers, explosives, and cellulose acetate should open these processes to the use of high alpha wood fiber.

The synthetic fiber and cellulose ester industries are rapidly growing and will demand increasing amounts of cellulose. The cellulose acetate fiber industry is growing at an amazingly rapid pace. It appears to be undergoing radical developments involving changes in acetylation methods and solvents used which may bring down the price appreciably. Cellulose acetate may also enjoy a growth in use for films and plastics. Although cellulose acetate can be made from wood cellulose it is commercially manufactured from cotton. Investigation of the proper treatment of wood cellulose should enable it to meet the requirements of the cellulose acetate process.

The development of a synthetic wool of satisfactory qualities and the introduction of other cellulose ester and ether products will all contribute to an increased use of cellulose.

Although the quantity of cellulose used by these industries is small compared to that consumed by paper, they would nevertheless be a welcome additional market for wood pulp.

Grays Harbor Mill Diversifies Its Lines

Speaking to the Aberdeen, Wash., Chamber of Commerce on November 16, J. F. Wuenschel, sales manager of the Grays Harbor Pulp & Paper Company, traced the development of the diversified lines of production which characterize the present activities of the big Hoquim plant. From a single product—"Management" bond—to a list of products that looks like a catalogue of paper manufactures, the Grays Harbor Pulp & Paper Company's output has grown since 1929.

Depression conditions had cut down sales in 1930 until a large stock of unsold paper was on hand and part time operation was threatened as a result, according to Mr. Wuenschel. Then the idea for diversification of output came to the front to save the day.

The first line to be added was a ledger grade for banks and accounting departments, produced in white and buff colors. This met with moderate success so unwatermarked mimeograph paper and a railroad tariff stock were added next. Then, in rapid succession, came envelope paper, offset book paper and Hammermill watermarked mimeograph paper. The tariff paper was very successful and the envelope stock was contracted for by one of the largest envelope manufacturing concerns in the United States. The watermarked mimeograph stock gave the company two grades of this type of paper. The government added a new line to the company's list when the U. S. printing office in Washington, D. C., placed an order for a special kind of paper.

The latest line to be added is one including school tablets, notebook fillers, scratch pads, cash register rolls, etc. This line is making its debut in the local market now, according to Mr. Wuenschel.

In his opinion, this great diversification has permitted the Grays Harbor Pulp & Paper Company to keep operating full time despite depression conditions. Had the company depended solely upon its single line of "Management" bond, they most certainly would have had to curtail production sooner or later.

As it is, the tonnage of the plant has increased steadily and, although prices are low, the volume of business has been good. Mr. Wuenschel said that, from the volume standpoint, the business of the Grays Harbor concern is picking up. He attributes low prices to the importation of foreign pulp rather than to lack of demand for paper products in this country.

The experience of the Grays Harbor Pulp & Paper Company in this period of depression should be of value to all concerns handicapped by similar conditions. It is a repetition of the old advice: "Never put all your eggs in one basket."

Pulp Cutting Provides Unemployed Relief

Pulp wood cutting has become almost synonymous, on Grays Harbor, with unemployment relief. It has provided work for a larger group of jobless family men of Aberdeen, Hoquiam, Montesano and Elma, for the past two years. The numerous pulp wood shows around the Harbor have absorbed many men who might otherwise be out of work. The contractors on these shows have given preference to men who appealed to the county charity commissioner for aid, and so have given employment where it probably was most seriously needed.

Prices for pulp wood cutting have been stable at $2 the cord, although there has been some talk of a 50c reduction this winter. So far no such reduction has been made by contractors.

It is difficult to say exactly how many men are employed in this work, but there are possibly in the neighborhood of 500. Principal sources of supply of the relief labor pulp wood around Aberdeen and Hoquiam are on the South Harbor near the Westport road, in Bear Gulch just out of North Aberdeen, and out of Cosmopolis on the Willapa Harbor road.

Colorado Paper Plant To Be Sold At Auction

The Colorado Pulp and Paper Company near Denver which has been the object of extensive litigation for the past five years is due to pass into the hands of new owners in the very near future. District Judge E. V. Holland has ordered the assets sold at public auction on December 29 and has also ordered a 50% distribution of funds to creditors. All claims of creditors had to be filed with the court by December 1.

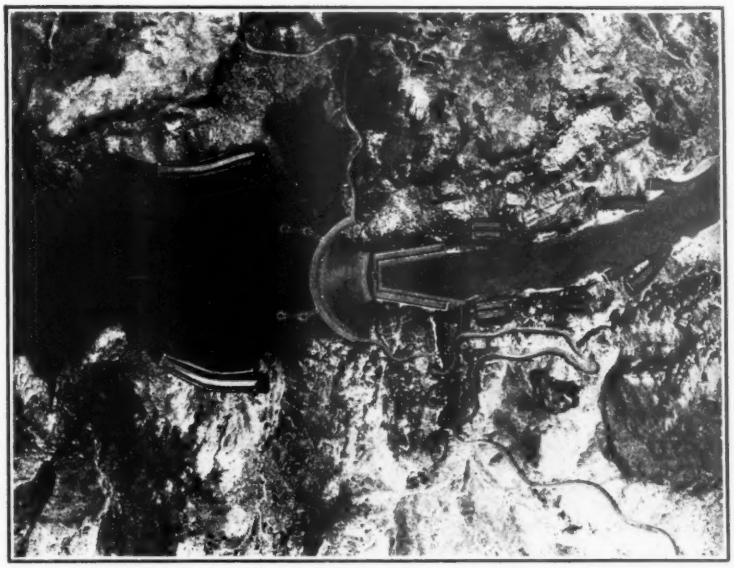
The court order further provides that bonds issued by the firm in 1925 are valid and may be bid in in lieu of cash at the auction. W. W. Grant, Jr., is a special referee looking into the company's affairs. The sale will be held at the Adams County Courthouse at Brighton.

Keeping paper up to specified grade is a problem in itself, but once in a while the shoe is on the other foot. As for example, on a recent occasion, St. Helens Pulp & Paper Company's general superintendent, J. E. Ryberg, found the sheet coming off the new machine to carry a consistently higher pop test than was specified. Everything else was normal, but the sheet simply was considerably better than had been anticipated.

PACIFIC COAST PROGRESS

BOULDER DAM

Photographs by Fairchild Aerial Surveys and illustrations by courtesy of "The Standard Oil Bulletin", published by the Standard Oil Company of California.



Harnessing the Colorado River means more people, more industrial life, for the Pacific Southwest. The enormity of this great engineering feat may be partially visualized in comprehending such facts as: a concrete dam 727 feet high, 650 feet thick at the base, constructed between vertical walls of rock 300 feet apart; 5,000,000 cubic yards of concrete; impounding of 26,000,000 acre feet of water, enough to irrigate 500,000 acres; power development of 1,000,000 H.P. (peak load). The aerial view above looks downstream into Black Canyon, site of Hoover Dam. When the dam is completed the reservoir will be in the lower right hand corner of the illustration, in the direction indicated by the river. Below is a vertical aerial view of the dam site, with the dam and construction auxiliary thereto shown sketched in.

T-R-A-D-E - T-A-L-K

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Hawley's Cover Paper Going Well

Hawley Pulp & Paper Company since September 1 have been making a cover paper on their No. 1 machine. It is said to be the first manufacture of cover paper on the Pacific Coast, and only four eastern paper manufacturers are listed as making it namely, Albermarle Paper Manufacturing Company, Richmond, Va.; American Writing Paper Company, Holyoke, Mass.; The Beckett Paper Company, Hamilton, Ohio, and Hammermill Paper Company, Erie, Pa.

The new paper is meeting with good response from the trade and already some re-orders have been received at the Hawley plant. It is put out under the mill brand "Coast Cover" and is made in ten attractive colors, fast to light—black, blue, brown, canary, gold, green, gray, orange and red. They are all in bright, cheerful color with uniform antique finish and are recommended to advertisers and printers for a variety of ses, inclding announcements, folders, envelope enclosures, booklet and text covers, and also as constrction paper.

Zellerbach Paper Company are handling the line under their own trade name "Victor Cover" and Carter, Rice & Company under their brand "Totem Cover", and other houses are carrying the paper under their own trade name or the mill brand.

The mill is stocking a complete line of all colors in standard sizes and weights.

Advertising material on the paper is now in preparation. Sample booklets have been made up for some of the jobbers and advertising on the mill brand is now in the printer's hands.

The Perfection Twine Company of Camas, Washington, which makes twine out of kraft paper, has added to its line a new cellophane ribbon, which it manufactures in colors. The ribbon is suitable for gift wrappings and for fancy packages.

J. A. Carpenter, of the Kansas City office of Carter, Rice & Company, and Isaac W. Carpenter, of the Omaha office of the same firm, spent several days early in November in Denver at the offices of the Carter, Rice and Carpenter Paper Company. The former is president of the Denver concern and the latter a member of the board.

Wadhams & Co. In Portland Add Paper Line

Notices have been sent out to the printing trade that Wadhams & Company, Inc., East Morrison at Second, Portland, have established a complete paper department, including a full line of fine papers for printer's use.

The company has been in business in Portland for many years, serving the independent grocery trade. In conjunction they have maintained a coarse paper department, handling sulphite and manila wrapping papers and paper bags.

C. H. Shephard has been engaged as manager of the paper department. He has had a background of experience in another market under similar conditions.

Henry Hahn is president of Wadhams & Company; J. Durkheimer is vice-president, and S. F. Durkheimer is secretary.

Duty on News Print Would Help

"If Congress would revise the Sherman anti-trust act, it is my opinion that the outlook for 1932 would be much brighter," said J. Y. Baruh, vice-president, Crown Zellerbach Corporation, in Los Angeles, recently. "This revision would at least allow the manufacturers to work out their problems together without their being haled into court. Higher wages and less unemployment would result, even if the manufacturers had to work under restricted conditions.

"There should also be some move made to stabilize the price of silver, which would raise the purchasing power in those countries using that metal as standard.

"Coming down to the paper industry in particular it is my opinion that a duty on news print would help things enormously."

Regarding the future Rodman C. Pell of Pelican Paper Co., San Francisco, says: "I'm very cagey about predicting anything for the future. Believe it will be four or six months yet before we get out of the doldrums. This is a matter of marking time waiting for overproduction to cease and demand to catch up with supply. With us business is going along; we still operate on the increased wage arrangement."

Says Thos. A. O'Keefe, Pacific Coast Paper Co.: "I really think we've hit bottom but we won't know when we do start up. All we can do is to plug along doing the very best we can until something breaks."

And from Charles Pritchard of Bonestell & Co.: "Don't quote me on any prosperity interview, for I have read too many optimistic predictions and seen them repudiated. If we talk less and work more we will get somewhere."

As usual Denver paper men were in on the big Community Chest drive held late in November in that city. J. Harry Custance of the Carter, Rice and Carpenter Paper Company and Nick La Guardia, Graham Paper Company were members of teams which aided in putting over the biggest drive in history. The city raised its quota of $735,000 for the Chest and $400,000 for an unemployment relief fund.

Zellerbach Jobbers to Hold Annual Conference

As is their custom, the managers of the Coast-wide chain of Zellerbach Paper Company paper distributing house will convene in San Francisco at executive headquarters for the annual managers' conference on December 19-22. The first two days will be taken over by the managers of the different Zellerbach divisions and the final two days will be devoted to standardization efforts.

Harold Zellerbach, president of the Zellerbach Paper Company, will preside at the managers' conference. The Standardization sessions will be in charge of Louis A. Colton, vice president, of the San Francisco executive headquarters. Meanwhile Gene Breyman, assisted by Rollie Ayres, both of San Francisco headquarters, are busy with shaping up the program.

The annual salesmens' conference is to be abandoned for this year.

These meetings have grown to be quite a tradition with the Zellerbach Paper Company. Among those who are expected to be present at the 1931 meeting are F. C. Stratford, manager of the San Francisco division; J. C. Ady, manager of the Oakland division; A. R. Kuhn, manager of the Fresno division; Philo K. Holland, manager of the San Jose division; L. J. Doherty, manager of the Sacremento division; J. L. Taylor, manager of the Stockton division; Victor E. Hecht, manager of the Los Angeles division; W. D. McWaters, manager of the Portland division; A. W. Akers, manager of the Seattle division; Albert G. Mohn, manager of the Spokane division, and Wm. G. Lambert, manager of the Salt Lake City division.

The standardization committee, which will meet on the last two days, is composed of Mr. Stratford, Mr. Ady, Mr. Hecht, Mr. McWaters, Mr. Akers and Mr. Lambert.

E. N. Smith in New Quarters

E. N. Smith, mill representative for California, Washington and Oregon, for Crystal Tissue Company, Middletown, Ohio; Tuttle Press Company, Appleton, Wisconsin; Rhinelander Paper Company, Rhinelander, Wisconsin; Thilmany Pulp & Paper Company, Kaukauna, Wisconsin, and Western Advance Bag & Paper Company, Boston, Massachusetts, has recently moved his office from 629 Insurance Exchange Building, Los Angeles, to 775 Terminal street, in the Central Manufacturing District.

Mr. Smith's brother, Howard C. Smith, who has represented the Milwaukee Lace Paper Company on the Coast for the past 15 years now has his offices at the same address as his brother. He was formerly located in the Pacific Mutual Building, Los Angeles.

Mr. Smith states that his new offices will adjoin his large warehouse stocks, which are now much more convenient to the jobbing trade; that he will take on additional office help; and that he is opening an attractive display room for the benefit of the Los Angeles paper trade in conjunction with his new offices. He will increase the warehouse space about 100%, and will increase his stocks about 33%. Mr. Smith has built up a considerable business in his lines during the six years he has been on the Pacific Coast.

A fourth press was recently installed at the Vernon plant of Fibreboard Products Inc., on the number one machine, which is used for specialties. This will materially improve the finish of the sheet, one of the regular characteristics of the board used by printers, officials state.

Tompkins Goes East—O'Keefe to Manage

From now on Thomas A. O'Keefe will be spending no small part of his time in the clouds between California's two leading cities. Reason is that George I. Tompkins has vacated the managership of the Sierra Paper Company at Los Angeles and has gone East. Mr. O'Keefe will be in command of the Los Angeles house, while at the same time retaining an active hold on the steering gear of the Pacific Coast Paper Company at San Francissco, some 400 miles to the north.

THOMAS A. O'KEEFE
has taken charge of the
SIERRA PAPER COMPANY
branch at Los Angeles

The little problem of geography, or how to be in two places at once, or nearly at once, will be solved by Mr. O'Keefe as any other out-and-out aggressive young business man would solve it. He will fly back and forth. Flying isn't new with Mr. O'Keefe, as he has used plane service between the two California rival cities for some time.

"I haven't bought my own plane yet," Mr. O'Keefe states, "but there's a possibility in the idea."

Resident manager for the Sierra Paper Company has not been named at this writing.

Mr. Tompkins will take up new duties with the Butler Paper Corporation in the Middle West. He has resigned as president of the Pacific States Paper Trades Association. H. L. Zellerbach, president of the Zellerbach Paper Company, has moved up from executive vice-president of the association to fill the vacated presidency until the next annual meeting of the association at Del Monte next spring. The other officers of the association do not move up.

Megel in Hawley's Portland Office

G. D. Megel who, for the past year has represented the Hawley Pulp and Paper Company in the San Francisco Bay district, has been transferred to the Company's newly opened office in the Pacific Building, Portland, succeeding E. A. O'Neill, who is now associated with Powell River. Mr. Megel will cover the entire state of Oregon.

The Hawley Mills recently announced as additions to their already wide line of sulphite specialties, a full line of crepe sulphite towels, both bleached and unbleached, crepe and embossed napkins, and a line of cover stock in ten colors under the mill brand of Coast Cover.

Kraft Prices—An Unknown Quantity

"One guess is as good as another on which way kraft prices are going to go," remarks G. J. Ticoulat, of the sales department of the Crown Zellerbach Corporation. In general, kraft prices on the Pacific Coast have maintained a better equilibrium than prices in eastern United States territory, Mr. Ticoulat states.

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New Models
New Machines

EQUIPMENT

Manufacturers of, and dealers in, equipment used by pulp and paper mills, board manufacturers, converting plants, paper merchants, or any other branch of the industry may make their announcements in this department.

New Dealers
New Branches
Appointments

The Westinghouse Industrial Relation Program

The Industrial Relations Program evolved in more than 40 years corporate existence of the Westinghouse Electric and Manufacturing Company, was designated one of the nation's best and presented a capital award in a contest recently conducted by B. C. Forbes.

The Westinghouse program, according to its sponsors, includes all the fundamental welfare policies necessary to any modern industrial concern. This program includes a relief fund, to provide for the contingencies of sickness, or injury while off duty; a trusted savings fund, paying six per cent interest up to a certain savings total, thereafter four per cent; an annuity plan for old age independence, an education and training plan; housing and building and loan program; an incentive plan for executive and supervisory force; and a conservation of health plan, which includes safety measures and programs, physical examinations and medical service.

More than 37,000 employes are covered by group insurance, totaling $98,000,000; the company has aided 771 employes in the erection of their own homes which have a value approximating $3,900,000; 991 employes during 1930 received the sum of $700,000 as relief benefits due to accident while off duty or to illness; 572 employes on the retirement roll received a total of $165,000 per year; 12,000 employes have on deposit $4,000,000 in the Savings Fund; 607 employes are in the Building and Loan Fund, whose assets total $517,500; there are in the Westinghouse organization 10,000 people each with over ten year's continuous service; and over 3,000 persons whose service extends over a period of more than 25 years.

Bristol's Recording Absolute Pressure Gauge

In the control and operation of apparatus that relies on the maintenance of a high and constant vacuum under all conditions, it is necessary to correct all such vacuum readings as indicated or recorded, by reference to a barometer. This is inconvenient when the need for these corrections become continuous.

Since there can be no control of variations in barometric pressures, there is a need for a vacuum gauge which automatically compensates for barometric pressure changes.

When a high reading vacuum gauge is compensated for barometric pressure changes, it becomes in actual use a low range absolute pressure gauge.

A new direct reading, single pen absolute pressure gauge of the recording type, has been developed by The Bristol Company, Waterbury, Connecticut.

The use of the high vacuum is an important factor in many production processes. This instrument now offered eliminates any possibility of confusion or delay, resulting from applying barometric corrections to vacuum readings.

Link-Belt Reports Business

Link-Belt Company, Portland office, reports considerable activity in paper mill equipment in that locality in recent months. The new Weyerhaeuser pulp mill and chipping plant, which recently started operations at Longview, was furnished with Link-Belt products consisting of belt conveyor rolls handling chips over digestors, screw conveyors handling lime, flat belt rolls to be used as heavy duty gravity rolls and complete mechanical equipment for 192 rotary chip feeders for withdrawing chips from storage bins.

An especially good record on the matter of delivery was made on these rotary feeders as the entire shipment, which weighed in the neighborhood of 125 tons, was made in seventeen days from the Link-Belt San Francisco plant. In addition over a carload of Link-Belt chain, made up of malleable transfer and refuse chain, finished steel roller chain, drop forged heat-treated steel rivetless chain and steel attachments as well as a considerable quantity of steel roller chain specially designed for slab transfer purposes, was installed in this plant.

Oliver-United Representative Visits Northwest

P. J. McGuire, representative of the Oliver-United Filters Inc., with offices in Los Angeles, spent some time in the Northwest in November and December looking over the pulp and paper mills. One of the principal objects of his visit was the supervision of final installation of several very large units of Oliver-United Filters in the new bleached sulphite pulp mill of the Weyerhaeuser Timber Company at Longview, Washington.

New Cleveland Worm Gear Reduction Unit

A recent addition to the series of standard worm gear reduction units manufactured by the Cleveland Worm & Gear Company, Cleveland, Ohio, is designed to transmit up to about 7½ horsepower, the capacity depending on the reduction ratio and worm speed. The new size of unit is furnished in both horizontal and vertical types, and is designated size 70.

All shafts of the size 70 Cleveland unit are mounted in anti-friction bearings.

De Laval Offers New Pump

Heads higher than those practicable for a single stage centrifugal pump can be generated by connecting two or more independent single stage pumps in series, but while such an arrangement is generally used when relatively large capacities are required, the cross-connecting piping introduces additional frictional surface and involves extra space and cost.

A two-stage pump having single suction impellers placed back to back, that is, with the suction openings facing towards the ends of the shaft, is described in Catalog B-3, issued by the De Laval Steam Turbine Co., Trenton, N. J.

The new pump is hydraulically balanced, just as is a single stage, double suction pump, and has but two pairs of wearing rings, the same as the single stage pump. Because of the reduced leakage, limited surface in contact with moving water and relatively high speed and high head per stage, the efficiency of these pumps is relatively high.

Brown Organizes SAFETY Committee

E. R. Brown, who has been SAFETY director of the Crown Willamette Paper Company for the past 14 years, and who was recently elected general manager of the Columbia Basin division of the National SAFETY Council, has moved his offices in Portland from the Guardian Building to Room 238, Multnomah Hotel. He is also president of the Oregon Industrial SAFETY Congress and his new office is on the same floor of the hotel as that of Dr. G. B. Herington, secretary of the Oregon organization.

Mr. Brown has appointed the following committee of pulp and paper men to work out a SAFETY code for the pulp and paper industry in Oregon; R. S. Schadt, Hawley Pulp & Paper Company, Oregon City, chairman; O. P. Wegner, Oregon Pulp & Paper Company, Salem; J. C. Ryberg and L. C. Logan, St. Helens Pulp & Paper Company; Carl Dilling, Western Waxed Paper Company, and Clarence Bruner, Crown Willamette Pulp & Paper Company, West Linn. The organization meeting of the newly appointed committee was called for December 12. The result of their efforts will be submitted to the Oregon State Industrial Accident Commission for adoption and enactment as a part of the state SAFETY code.

To Prevent Accidents—Cut Off a Finger

Commenting on a recent paper mill fatality in which a mill worker lost his life by getting tangled in the rewinder, a veteran and highly intelligent paper mill executive suggested a unique and startling, but, he believed, most efficient SAFETY measure.

"If every man who went to work at the paper trade could get one of his fingers split the first day, it would be a fine thing for him," he said. "There would never again be any danger of his getting hurt in the mill. Even if he lost the first joint of a finger it would be an excellent investment."

A man can be told and told and told over and over to be on his guard against danger, but in most cases, in the opinion of this papermaker, such warnings have no effect. They just don't register. The man who has never been nipped is like the child who has never been burnt. The cautions mean nothing. The child has to touch the stove. The man has to get caught.

"It's not exactly carelessness that causes these mill accidents," he continued. "It's contempt for danger. A man works in a spot that he knows is dangerous for a long time and he gets to thinking that he is immune—the thing can't get him. But if he had had a finger squeezed just once that would be enough. That man would be SAFE from then on."

This paperman's theory is that a pinched finger may be painful for a short time, but it's better to suffer that and thereby save oneself from serious permanent injury or loss of life. And he can fall back on the medical profession for support of his SAFETY plan, for physicians have long been immunizing their patients against contagious diseases by innoculating them with mild forms of the disease.

Best Use of Soil Is Forest Service Goal

The best use of the soil must be the common goal of long-time public policies in forestry, agriculture, and publiclands utilization, R. Y. Stuart, chief forester, states in the annual report for the fiscal year 1931, of the U. S. Forest Service.

"Lack of economic balances and lack of stability conspicuously characterize the relationships between forest use and forest resources," Major Stuart said. "The forest problem and the agricultural problem are in many ways interrelated. Both call for foresighted planning and wisely directed public and private effort to adjust production to needs, and to bring about the utilization of our vast land resources along lines that will contribute most to our permanent national welfare."

Too much land has been mistakenly cleared. It is important to grow forest crops as a means of utilizing lands that agriculture will not employ. Intensive forest production should be allocated to lands where production is most effective and most needed, Major Stuart said.

"The lumber industry," the report says, "has always been essentially unstable, in the sense that as an exploitative industry it has been shifting. Its individual establishments have been temporary, moving from one location to another as new stumpage supplies became necessary, while the industry as a whole has been moving its center from one great forest region to another as regional depletion of the virgin timber stands dictated. It can shift no farther.

"Now the lumber industry is unstable for another reason. In an effort to liquidate its Pacific coast holdings at the favorable prices which it had built up, its sawmill capacity has been overdeveloped. There is created the dual problem of reducing sawmill capacity and simultaneously revising timber-holding policies from a liquidating to a sustained-yield basis."

In several Western States, according to the report, cutover lands are becoming tax delinquent on an alarming scale. Considering all the difficulties and uncertainties involved in substituting forest management for forest disposal, state policies that will assure a reasonably stablized ownership of timberlands must evolve gradually. The problem would be much greater had not the Federal national forest policy provided a stable form of ownership for much of the forest land in the West.

In providing work for the unemployed under emergency appropriations for various protection and improvement projects, the Forest Service gave temporary work to many men. The greater part of the expenditures for unemployment relief went for road and trail construction. Other improvement work which the Forest Service speeded up included construction of telephone lines for fire control, permanent fire breaks, lookout cabins and towers, and improvement of public camp grounds and ranger stations.

"The whole nature of the national-forest enterprise makes unemployment a matter of direct concern to forest officers," Major Stuart says in his report. **"The national forests are not handled primarily as business enterprises to make money, nor as conservation undertakings designed to sacrigce present welfare and use for the benefit of coming generations. The basic purpose is (1) develop the potential capacity of the resources to meet human needs, and to expand use up to that capacity, always provided that the resource itself is not dissipated."** To function intelligently, forest managers "must always have in view the local welfare and must study how to increase the local value of the forests as means of livelihood to those dependent upon them and as contributions to community prosperity."

H. C. Macaulay, electrical engineer, formerly with the Continental Paper & Bag Corporation, Rumford, Maine, has arrived recently in Portland and is making his home at 449 East 22nd Street North. He says he has not yet made a connection on the Coast but expects to remain in the paper business and to make a connection soon out here.

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STATEMENT OF ACCIDENT EXPERIENCE—OCTOBER, 1931

(Mills in the State of Washington)

COMPANY—	Hours Worked	Total Accidents	Frequency Rate	Days Lost	Severity Rate	Standing
Everett Pulp & Paper Co., Everett	63,768	0	0	0	0	1
Grays Harbor Pulp & Paper Co., Hoquiam	61,074	0	0	0	0	2
Fibreboard Products Inc., Port Angeles	28,824	0	0	0	0	3
Shaffer Box Co., Tacoma	14,859	0	0	0	0	4
Crown Willamette Paper Co., Camas	256,441	3	11.7	97	.378	5
Puget Sound Pulp & Timber Co., Bellingham	28,624	1	34.9	10	.349	6
Fibreboard Products Inc., Sumner	27,728	1	36.1	10	.361	7
Puget Sound Pulp & Timber Co., Everett	53,000	2	37.7	11	.208	8
Inland Empire Paper Co., Millwood	45,292	2	44.2	34	.751	9
Longview Fibre Co., Longview	110,078	5	45.4	46	.418	10
Columbia River Paper Mills, Vancouver	40,521	2	49.4	42	1.036	11
Rainier Pulp & Paper Co., Shelton	63,606	6	94.4	80	1.258	12
National Paper Products Co., Port Townsend	71,790	7	97.5	71	.989	13
Washington Pulp & Paper Co., Port Angeles	49,795	5	100.4	65	1.305	14
Pacific Straw Paper & Board Co., Longview	15,140	2	132.1	35	2.312	15

The following mills not reporting: Pacific Coast Paper Mills. Mills not in operation: Cascade Paper Co., Tumwater Paper Mills, St. Regis Kraft Co., Puget Sound Pulp & Timber Co., Anacortes.

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Japan's Consumption of Rayon Pulps

Wood pulp requirements by Japan's rayon mills are estimated at around 2,400 long tons monthly, according to a recent report from Consul E. R. Dickover, Kobe. Up to the present dependence has been placed on foreign sources of supply for the best grade bleached sulphite pulp used in these mills, and until the past year Norway and Finland have been the leading sources of supply. Imports from the United States have increased for some months past, and although official statistics of imports are not sufficiently subdivided to be of interest it is reliably estimated that the United States is now supplying one-half of Japan's monthly requirements in this line. Last year Japanese mills experimented with pulp made in Saghalien by a Japanese company, but the results were unsatisfactory due to the excessive amounts of resins and copper salts present.

Japanese Paper Men on Coast

Yoichi Awoyama, chief engineer, and Risaku Ohkawa, general superintendent, of the Fuji Paper Company, Tokio, one of the largest pulp and paper organizations in Japan, were recent visitors to Vancouver, B. C., and during their stay in British Columbia visited the plans of the Powell River Company and Pacific Mills, Ltd.

The Fuji Paper Company operates 52 machines in 13 miles. According to Mr. Awoyama, there is a brisk business in converted paper goods such as cement bags and also kraft paper. His company's proposed expansion in these lines brought him to this country to study new machines and methods. Competition of Scandinavian pulp and paper is a serious factor, he says.

Japan Closes Down Pulp Mill

The Oji Paper Manufacturing Company closed down its pulp mill in Odomari in late October. At the same time it announced the dismissal of 500 employes in its paper mill at Toyohara, Karafuto. The moves were taken as necessary to meet extreme conditions during the present depression period. Heavy restriction of output has been necessary. Invasion of cheap Scandinavian pulp during the period of depreciated currency and the Chinese boycott of Japanese manufacturers have worked particular hardships on the Japanese paper industry. It is reported that the Oji company may grant some $200,000 for the aid of workers thrown out of employment.

Japanese Pulp Market Hard Hit

The Manchurian fuss has affected the sale of British Columbia pulp in the Far East, according to Lawrence W. Killam, president of B. C. Pulp & Paper Company, Vancouver.

"Under normal conditions China buys a good deal of its paper from Japan," said Mr. Killam. "Owing to the boycott, being strictly maintained in China against Japan, these purchases are down to a negligible figure, with the result that one of Japan's most important sales outlets has dried up. This has created a congestion of paper stocks in Japan and quite naturally this has affected Japan's purchases of pulp from this country. China's imports of pulp from this coast have not been very extensive, although Canada has shipped with fair regularity during the last two or three years. Japan is our important market in the Orient, and with Japan out of the market sales are bound to suffer.

Mr. Killam does not expect any permanent effect on Oriental trade as a result of the present campaign.

More Paper Orders for Scandinavia

An increase in inquiries for paper is indicated by reports from all northern European countries. The demand is livelier and some mills now have sufficient orders on hand to operate at capacity for the balance of the year. Norwegian mills are selling mostly in pound sterling without a guaranteed rate of exchange, assuming the risk of any change in the value of the pound. It is reported that Swedish exporters are requesting a guaranteed rate while Finland is following Norway's example. A conference between the manufacturers of paper in the three countries has been suggested so as to establish a common policy in dealing with the present currency situation.

Metal Cloth Factories Opened in Finland

Two metal cloth factories, able to supply all the requirements of domestic paper factories, will be opened soon at Malm, Finland, according to a report from Consul John L. Bouchal, Helsingfors, made public by the Department of Commerce. All of the metal cloth requirements for these mills have thus far been filled by imports from foreign countries. Both metal cloth factories have been organized by Finnish paper interests which control the majority stock and in both instances a part of the shares have apparently been subscribed for by Swedish interests and Swedes are represented on the boards of directors of both companies.

Swedish Pulp-Paper Wage Agreement Ended

Existing wage agreements in Swedish pulp and paper mills have been cancelled, effective January 1, 1932. It is probable that the Employers' Association will insist on lower wages, to which it is doubtful if labor organizations will agree, since the latter are claiming that the reduced value of Swedish currency will automatically reduce wages by 25%. A conflict seems unavoidable, which may culminate in a lockout. Everything depends on currency developments between now and January 1. Any considerable change will necessitate a readjustment of wage scales. (Commercial Attache Marquard H. Lund, Oslo.)

New Pulp Rate Via All-Water Route

The Luckenbach Gulf Steamship Co., Inc., has been advised by the Mississippi Valley Barge Line that effective November 20th, item was added to Tariff No. 4 as follows:

WOODPULP, in bales, in lots of 175 net tons, from New Orleans, La., to Cincinnati, Ohio. Rate—22c per 100-lbs. (See Note 1).

Note 1—Applies only as a proportional rate on shipments originating on the Pacific Coast and moving thru the Panama Canal and when destined Hamilton, Ohio, and applies only to Cincinnati Dock or to cars on dock.

Rate to expire June 30, 1932.

How pulp and paper car loadings have measured up to predictions, and what the prospects are for the next three months were scheduled to be outlined at the sixth annual meeting of the Pacific Northwest Advisory Board at the Multnomah Hotel, Portland, December 11.

Edward Bouchard, master mechanic at the Hawley Pulp & Paper Company mill at Oregon City for the past three years, has resigned and gone to Quebec City, Canada. His position has been filled by Glen Smith, formerly draftsman at the mill.

—and still going strong

Another Timken Bearing Service Record!

The Timken Roller Bearings in this Elliott pump installed in a large industrial plant have been in actual service over 4 years, averaging 20 hours a day, 6 days a week, with no attention except for lubrication.

During this time they have rolled up the staggering total of 6 billion revolutions at 3500 a minute—175 times the life of the average automobile—and a recent inspection showed them to be in perfect condition and good for billions more.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

When writing THE TIMKEN ROLLER BEARING CO., *please mention* PACIFIC PULP AND PAPER INDUSTRY.

Canadian Exports of Pulp and Paper October, 1931

Canadian exports of pulp and paper in October were valued at $11,666,350 according to the report issued by the Canadian Pulp and Paper Association. This was an increase over the previous month of $581,985.

Wood-pulp exports for the month were valued at $2,644,278 and exports of paper at $9,022,072 as compared with $2,330,276 and $8,754,089 respectively in the month of September.

Details for the various grades of pulp and paper are as follows:

	October, 1931		October, 1930	
Pulp—	Tons	Dollars	Tons	Dollars
Mechanical	12,929	351,191	20,161	565,689
Sulphite Bleached	24,490	1,429,200	20,712	1,422,529
Sulphite Unbleached	12,117	455,570	14,285	689,306
Sulphate	5,829	380,067	5,734	396,237
Screenings	1,550	22,740	2,622	36,010
All Other	105	5,510	668	47,073
	57,020	2,644,278	64,182	3,156,844
Paper—				
Newsprint	171,031	8,711,521	200,776	11,445,421
Wrapping	901	78,583	1,021	104,633
Book (cwts.)	1,866	14,051	3,791	35,464
Writing (cwts.)			263	1,741
All Other		217,917		292,218
		9,022,072		11,879,477

For the first ten months of the year the exports of pulp and paper were valued at $118,298,241. In the corresponding months of 1930 the value was $148,733,256 so that there has been a decrease this year of $30,435,-015.

Exports of woodpulp in the period were valued at $24,987,988 while exports of paper amounted to $93,-310,253 as compared with totals of $33,284,198 and $115,449,058 respectively in the corresponding ten months of 1930.

Details for the various grades are given below:

	10 Months, 1931		10 Months, 1930	
Pulp—	Tons	Dollars	Tons	Dollars
Mechanical	132,266	3,765,423	166,913	4,813,658
Sulphite Bld.	215,167	13,526,302	211,813	15,415,565
Sulphate Unbld.	104,574	4,412,394	160,639	7,975,844
Sulphate	68,768	2,927,203	73,683	4,384,361
All Other	15,079	366,666	24,911	694,770
	535,854	24,987,988	637,959	33,284,198
Paper—				
Newsprint	1,675,256	90,132,531	1,932,367	111,065,319
Wrapping	8,195	751,919	11,552	1,210,742
Book (cwts.)	21,332	176,448	33,326	312,960
Writing (cwts.)	1,300	12,003	2,364	19,698
All Other		2,237,352		2,840,339
		93,310,253		115,449,058

Pulpwood exports for the first ten months of this year were 851,826 cords valued at $8,466,418 as compared with 1,220,377 cords valued at $12,408,696 in the corresponding months of last year.

B. C. Pulp Omits Dividend

Directors of British Columbia Pulp & Paper Company, Vancouver, have omitted payment of dividends on the company's 7 percent preference stock, of which there is $556,200 outstanding. The dividend, which is cumulative, was payable November 1.

In 1930 the preferred dividend was covered by a relatively small margin, earnings agter all charges totalling $41,216 or the equivalent of $7.51 a share on the preferred.

The preferred stock of B. C. Pulp & Paper was given to the original first mortgage bondholders of the Whalen Pulp & Paper Mills in lieu of arrears of interest, which totalled two and a half years at November 1, 1925. For each $1,000 of first mortgage bonds of the Whalen Pulp & Paper Mills, including overdue interest, there were issued $1,000 of 6 per cent first mortgage bonds and $150 of preferred stock of the B. C. Pulp & Paper Company.

The company manufactures 110 tons of easy bleaching and 100 tons of bleached sulphite pulp at its two plants at Woodfibre and Port Alice respectively.

Crown Willamette Earnings Show Improvement

For the six months ended October 31, 1931, Crown Willamette Paper Company shows a substantial increase in earnings over the same period in 1930. The summarized earnings statement is presented below:

CROWN WILLAMETTE PAPER COMPANY AND SUBSIDIARIES
(Including Pacific Mills Ltd., a Canadian Company)
Summary of Consolidated Profit and Loss Six Months ended October 31, 1931 and October 31, 1930.

	1931	1930
Profit before depreciation, depletion, bond interest and income taxes	$4,224,243.39	$3,935,717.63
Deduct:		
Depreciation	$1,393,504.70	$1,329,158.17
Depletion	233,110.72	321,175.06
Bond interest	647,444.77	667,765.85
U. S. and Canadian income taxes	267,234.99	222,186.54
Total deductions	2,541,295.18	2,540,285.62
Profit before deduction of minority interest	1,682,948.21	1,395,432.01
Less:		
Interest of minority stockholders in Pacific Mills Ltd.	24,992.38	28,899.86
Net profit	$1,657,955.83	$1,366,532.15

Crown Zellerbach Earns $2,185,442

Crown Zellerbach Corporation earned $2,185,442 for the six months ended October 31, compared with $2,382,680 in the like six months of the previous year. The earnings were net after all charges, but before deductions for minority stockholders' interests in subsidiaries. Deductions of minority interests amounting to $847,945 left a consolidated net of $1,337,497, or about $5.34 a share. Consolidated net for the like period of the previous year was $1,530,780.

Improve Cascade Mill Water Supply

W. J. Pilz, general manager of the Everett Pulp & Paper Company, has awarded a contract to a Tacoma contractor to construct a dam on Chambers creek, flowing into Puget Sound in the vicinity of the company's mill at West Tacoma (formerly known as Cascade Paper Co.).

The present improvement is a step toward necessary improvement of the water supply for the mill. No announcement has been made with respect to renewing paper manufacturing operations at the Tacoma mill. To the contrary, Mr. Pilz has indicated that under present market conditions the company is not inclined to bring the two Cascade machines into production.

The Puget Sound Pulp & Timber Company has put its Anacortes mill into operation again following a shut down lasting about three months. The mill is the oldest of the company's three and has a daily capacity of 60 tons of unbleached sulphite. Work was resumed on November 16.

Albert Bankus, technical assistant to the headquarters offices of the Crown Zellerbach Corporation at San Francisco, recently returned to the Coast following a business trip extending over several weeks spent in Eastern territory.

D. B. Davies was a recent speaker at a Kiwanis luncheon at Olympia, neighbor city to Shelton, where is located Rainier Pulp & Paper Company's rayon-grade sulphite pulp mill that Mr. Davies manages.

WILLIAMS STANDARD PAPER MOISTURE TESTER

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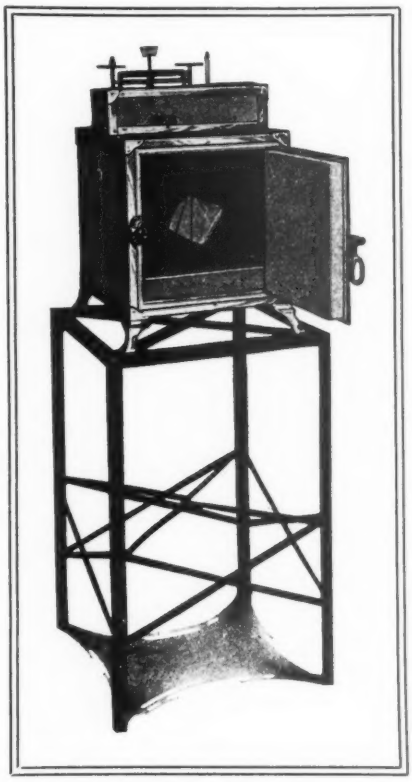
Tests all kinds of paper from tissue to board.



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WILLIAMS APPARATUS COMPANY

WATERTOWN, N. Y.

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News Print Production—October, 1931

The News Print Service Bureau's Bulletin No. 166, states that production of news print paper in Canada during October, 1931, amounted to 184,252 tons and shipments to 191,725 tons. Production in the United States was 97,117 tons and shipments 98,616 tons, making a total United States and Canadian news print production of 281,369 tons and shipments of 290,341 tons. During October, 26,614 tons of news print were made in Newfoundland and 1,413 tons in Mexico, so that the total North American production for the month amounted to 309,396 tons.

The Canadian mills produced 261,545 tons less in the first ten months of 1931 than in the first ten months of 1930, which was a decrease of 12%. The output in the United States was 119,227 tons or 11% less than for the first ten months of 1930. Production in Newfoundland was 7,079 tons or 3% more in the first ten months of 1931 than in 1930 and in Mexico 1,496 tons more, making a continental decrease of 372,197 tons or 11%.

During October the Canadian mills operated at 55.1% of rated capacity, United States mills at 62.7%, Newfoundland mills at 101.2% and Mexican mills at 73.7%, making a continental average of 59.8%. Stocks of news print paper at Canadian mills totalled 42,963 tons at the end of October and at United States mills 31,953 tons, making a combined total of 74,916 tons which was equivalent to 4.1 days' average production.

North American Production

	Canada	United States	Newfoundland	Mexico	Total
1931—October	184,252	97,117	26,614	1,413	309,396
10 months	1,854,469	971,365	246,482	13,145	3,085,461
1930—10 months	2,116,014	1,090,592	239,403	11,649	3,457,658
1929—10 months	2,243,582	1,160,757	212,226	15,751	3,632,316
1928—10 months	1,949,853	1,170,017	191,902	13,538	3,325,310
1927—10 months	1,710,220	1,248,822	167,434	11,853	3,138,329
1926—10 months	1,549,222	1,401,988	151,102	10,612	3,112,924
1925—10 months	1,252,902	1,263,098	71,695	10,659	2,598,354
1924—10 months	1,128,949	1,240,205	54,272	9,580	2,433,006

China Turning Trade Away From Japan

Large stocks of Japanese paper are being held in Shanghai warehouses following the boycott against Japanese products. Available stocks of newsprint, coated, and book papers are reported to be low with orders for replenishment going to European, and to a lesser extent American, firms. Chinese dealers are resisting higher prices by only placing small orders necessary for immediate requirements. The advancement in prices on Scandinavian papers is not yet commensurate with the depreciation of the pound sterling.

IMPORTS OF PULP WOOD AND WOOD PULP INTO THE UNITED STATES BY COUNTRIES AND CUSTOMS DISTRICTS

September, 1931

Compiled by the U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce

(Figures Subject to Revision.)

PULP WOODS

	Rough				Peeled				Rossed			
	Spruce		Other		Spruce		Other		Spruce		Other	
	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars	Cords	Dollars
COUNTRIES—												
Sov. Rus. in Eur.					24,082	343,148			3,347	47,688		
Canada	37,243	390,123	70	771	95,462	1,217,587	20,590	220,388	1,980	21,928		
Total	**37,243**	**390,123**	**70**	**771**	**119,544**	**1,560,735**	**20,590**	**220,388**	**5,327**	**69,616**		

Total imports of pulpwood, September, 1931, 182,774 cords—$2,241,633.

WOOD PULP

	Mechanically Ground Unbleached		Mechanically Ground Bleached		Chemical Unbleached Sulphite		Chemical Bleached Sulphite		Chemical Unbleached Sulphate		Chemical Bleached Sulphate		Soda Pulp, Unbleached and Bleached	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
COUNTRIES:														
Czechoslovakia					280	11,588	759	36,492						
Estonia					685	29,226								
Finland	444	12,741			8,139	369,648	2,141	100,586	5,799	218,231	125	6,157		
Germany					1,674	72,841	7,982	302,244	102	2,943				
Lithuania					501	18,670								
Norway	52	1,825	757	18,641	70	3,291	326	17,559	3	106				
Rumania							97	4,818						
Sweden	554	13,319	50	1,100	26,248	1,154,541	4,244	224,767	24,786	745,297		28		
Yugo. & Alb.					648	19,776								
Canada	14,808	328,217			5,785	224,436	15,726	921,632	2,823	179,668	1,036	97,388	252	13,659
Total	**15,858**	**356,102**	**807**	**19,741**	**44,030**	**1,904,017**	**31,275**	**1,608,098**	**33,513**	**1,146,245**	**1,161**	**103,573**	**252**	**13,659**
CUSTOMS DISTRICTS—														
Maine and New Hampshire	3,502	90,549			4,123	184,094	8,435	312,989	5,341	159,383				
Vermont	1,208	29,436			113	4,551	960	54,640	2,383	165,154	954	90,502	110	5,860
Massachusetts					4,116	186,197	2,511	153,983	6,445	214,449	125	6,157		
St. Lawrence	1,190	31,033			638	23,855	3,097	175,886	5	245	56	4,686	54	3,221
Rochester	102	3,357					94	4,035						
Buffalo	938	22,971			2,024	81,743	911	70,521						
New York	2,902	55,796	307	8,143	7,090	271,650	4,302	202,283	1,922	73,787				
Philadelphia	116	2,844	50	1,144	6,780	315,886	1,823	99,059	2,246	89,949				
Maryland	52	1,825	325	7,525	12,922	557,352	1,092	58,427	5,545	170,182				
Virginia					2,122	107,188	1,754	81,205	6,210	181,427		28		
New Orleans			125	2,929	100	3,985	21	1,270	1,450	33,297				
Los Angeles	504	12,335			747	42,050			31	1,482				
San Francisco									22	468				
Washington							73	3,282						
Dakota	22	577					99	4,997	413	13,801				
Duluth and Superior	532	12,042			267	5,687	61	3,157						
Wisconsin	1,000	12,500			1,515	68,759			1,500	42,621				
Michigan	2,326	64,287			1,473	51,020	6,042	382,364			26	2,200	88	4,578
Chicago	1,464	16,550												
Total	**15,858**	**356,102**	**807**	**19,741**	**44,030**	**1,904,017**	**31,275**	**1,608,098**	**33,513**	**1,146,245**	**1,161**	**103,573**	**252**	**13,659**

Total imports, all grades of wood pulp, September, 1931, 126,897 tons—$5,151,435.

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200 Rooms—200 Baths

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Log Barker Again in Action

The big barker recently installed by the B. C. Pulp & Paper Company is again in operation after a number of mechanical adjustments have been made. The barker is now handling logs with a diameter of 24 inches.

The barker is operated in connection with the company's Port Alice pulp mill. Owing to the large percentage of big logs brought in by the company's logging crews a slight congestion occurred and the barker was shut down for a short period during which changes were made to increase its capacity.

Japan's Pulp Imports—September, 1931

Japan imported chemical pulp as follows in September, 1931 (amounts stated in pounds): Sweden, 2,607,-068; Germany, 288,933; U. S. A., 3,876,133; Canada, 9,454,134; France, 120,133; Czecho Slovakia, 156,267; other Europe, 1,824,933; total, 18,327,601.

The Paper and Pulp Industry in September, 1931

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association from members and cooperating organizations, the daily average of total paper production in September increased 5% over August but was 6% under September, 1930. The daily average wood pulp production in September was 6% above August, 1931, but 7% below September, 1930.

Compared with September a year ago, the daily average production registered a decrease in the following grades: Newsprint, uncoated book, wrapping, writing, hanging and building papers. Compared with August, 1931, the following percentage decreases were registered in the daily average production: Uncoated book, 2.9%; wrapping, 7.7%; tissue, 8.0%; and hanging, 7.6%.

The nine months' cumulative total of production of paper was 9.5% below the corresponding period in 1930 while shipments were 8.8% smaller than a year ago. Newsprint, paperboard, bag and building papers have shown improvement while uncoated book, writing, tissue and hanging papers showed practically no change in production at the end of the nine-month period as compared with the end of the eight-month period.

The nine months' cumulative total of wood pulp production for this year was reported as 16% below the level of the same period in 1930.

Total shipments of wood pulp to the outside market were 30.2% below the level of the nine months' total of 1930. Bleached sulphite, mitscherlich sulphite and kraft pulp shipments to the open market were greater than in the first nine months of 1930.

Total wood pulp inventories showed a decrease and at the end of September were 20.5% below the level of September, 1930. All grades, excepting easy bleaching and mitscherlich pulp, showed inventories below the level of September, 1930.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF SEPTEMBER, 1931

GRADE—	Production Tons	Shipments Tons	Stocks on Hand End of Month—Tons
Newsprint	91,241	90,303	33,517
Book, Uncoated	65,558	66,771	47,056
Paperboard	163,622	164,460	57,657
Wrapping	39,636	39,406	44,147
Bag	12,363	12,342	4,960
Writing, etc.	21,154	22,089	45,991
Tissue	6,025	6,390	3,799
Hanging	3,040	2,972	3,121
Building	5,915	5,730	3,148
Other grades	14,368	14,368	14,208
Total all grades, Sept., 1931	**422,922**	**424,831**	**257,604**
Total all grades, 9 mos., 1931	**3,941,597**	**3,944,288**	**257,604**
Total all grades, 9 mos., 1930	**4,355,299**	**4,324,169**	**268,062**

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF SEPTEMBER, 1931

GRADE	Production Tons	Used During Month—Tons	Shipped During Month—Tons	Stocks on Hand End of Month—Tons
Groundwood	62,998	67,299	1,662	53,469
Sulphite News Grade	26,763	25,955	637	6,641
Sulphite Bleached	18,116	14,980	2,912	3,083
Sulphite Easy Bleaching	2,717	2,322	231	1,367
Sulphite Mitscherlich	3,208	1,844	859	1,830
Kraft Pulp	25,437	21,046	5,012	3,652
Soda Pulp	13,976	11,987	2,638	2,283
Pulp—Other grades	471	443	50	209
Total all grades, Sept., 1931	**153,686**	**145,876**	**14,001**	**72,534**
Total all grades, 9 mos., 1931	**1,524,289**	**1,389,924**	**131,103**	**72,534**
Total all grades, 9 mos., 1930	**1,817,408**	**1,603,181**	**187,812**	**91,263**

Wood Pulp Salesman Available

Wishes to make contact with Pacific Coast mill as a direct representative. Operating on the Eastern market, known as New England, New York, New Jersey and Pennsylvania. Having contact with Eastern paper mills and also have contact among Eastern selling agents of paper mill supplies. Have sold for many years foreign wood pulp grades such as Sulphite and Sulphate, unbleached and bleached, and also ground wood. Young executive with the best of references to submit.

Box No. 118, Pacific Pulp and Paper Industry, 71 Columbia St., Seattle, Washington.

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

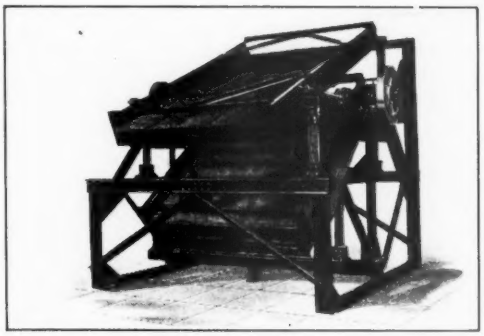
CANTON, MASS.

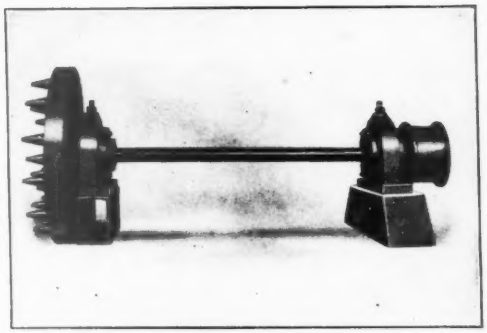
Woolen Manufacturers Since 1856

Pacific Coast Representative:

PACIFIC SALES CO., Security Bldg., Portland, Oregon

RYTHER AND PRINGLE COMPANY CARTHAGE N.Y.





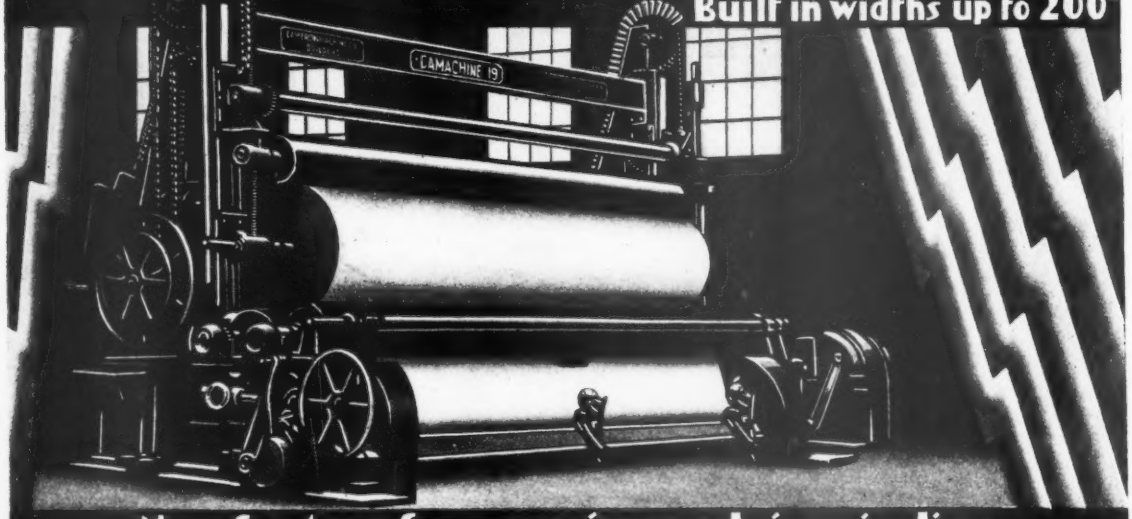
A combination of the RYTHER CHIP SCREEN and THE WOOD IDEAL CHIP BREAKER, inserted under the Chipper Hood insures an ideal combination for large capacity and perfectly separated chips, thoroughly dusted and in perfect condition for delivering to the chip screens. Send for bulletins 528 and 126 for full description.

CANADIAN INGERSOLL-RAND CO., 10 Phillip's Square, Montreal, P. Q.

WINDER FOR NEWSPRINT, BOOK, KRAFT AND OTHER PAPERS

CAMACHINE 19

Built in widths up to 200"



New feature for reversing web in winding.
Cameron patented method for winding rolls wire side out when required.

CAMERON MACHINE COMPANY 61 Poplar St. BROOKLYN, N.Y.

Fine Face Canvas Dryer Felts *for* Fine Papers

ENGLISH or BAKER WOVEN

Absolutely Leave No Felt Marks on Paper

TRIUNE Three Ply Felts Insure Large Production

Made from 60 Inches to 288 Inches Wide

FITCHBURG DUCK MILLS

FITCHBURG, MASS.

FRANK P. WILDER, Agent, 611 Irving Street, Portland, Oregon

Jones

A name that has won a world-wide reputation through 75 years devoted to paper-making progress

Watch Obsolescence —the enemy of Production Costs!

Low prices for finished products are the rule of the day! To meet these demands paper mills are compelled to modernize their equipment. If your old type beaters are helping to keep up production costs, because obsolete, you can rebuild them to exactly match the latest type JONES Beaters. They can be rebuilt at moderate cost to assure you of more economical production; more dependable operation, and to produce a better quality stock; the three important factors essential to meet the keen competition existing today. Modernization of your Beaters means a quick way to greater profits.

A JONES Engineer will gladly give you particulars, without obligation, as to how you can change your Beater costs from red ink to black.

PAPER-MAKING MACHINERY — E. D. JONES AND SONS COMPANY — ESTABLISHED 1856 — PITTSFIELD, MASS.

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PITTSFIELD · MASSACHUSETTS
BUILDERS OF HIGH GRADE MACHINERY FOR PAPER MILLS

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It is sound economy to generalize in G D C Colors.

Consult our representative — he can offer suggestions.

There is a G D C color for every specialized need.

Current colors are carried in stock at all our offices.

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NATIONAL

TIMELY SERVICE

To obtain a color match in the mill requires practical skill.

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To select those dyes most economical and suitable for a particular sheet requires a thorough knowledge of both dyes and stocks.

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We welcome these color problems.

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National Aniline & Chemical Company, Inc.

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PAPER DYES

NATIONAL N DYES

install

Copper Queen Rubber

(red friction surface)

Transmission Belting

and abolish the cost of power lost in transmission.

Copper Queen belting proves its brawn under the most severe service because Copper Queen is built for and does deliver continuous service whether the drive is steady or fluctuating.

Rubber belting experts, of long experience, build stamina into every inch of Copper Queen.

our engineering department will aid in solving your belting problems.

Buying Copper Queen by the roll and having it on hand when needed is long-sighted economy.

PIONEER RUBBER MILLS

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822 East Third Street
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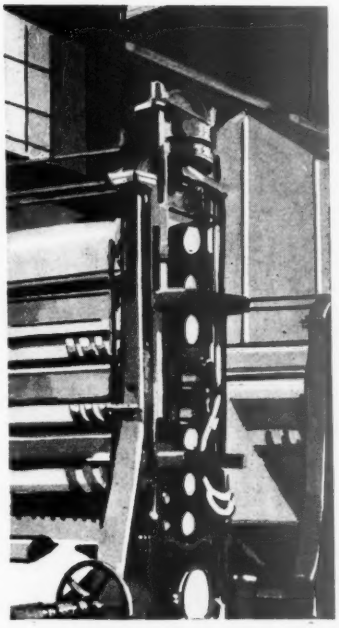
Obsolete Machines versus 1931 Profits

The most successful paper mills of today are the ones equipped with *new* machines or with machines which have been *modernized* to keep pace with heir wider and faster competitors.

Relative to the latter type we can show you some highly interesting figures from mills whose machines we have brought back into the "heavyweight" class without major operations on their treasuries. . . . Your request for more complete information on this subject will receive our immediate attention.



THE PUSEY AND JONES CORPORATION

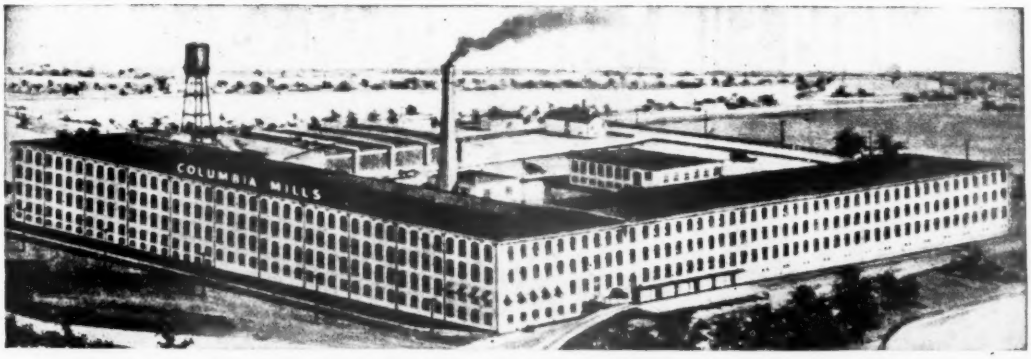
WILMINGTON
DELAWARE, U. S. A.

COTTON DRYER FELTS

"Mt. Vernon" Standard Weave
Medium—Standard—Extra Heavy
Widths "60 to 164"

"Richland" Triplex Weave
Widths 68" to 210"

Felts within above ranges made in lengths as required.



Columbia, S. C., Plant of Mt. Vernon—Woodberry Mills, Inc., Baltimore—where "Richland" Felts are made.

Orders must be placed sufficiently in advance to insure satisfactory delivery.

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TURNER, HALSEY COMPANY
74 Leonard Street, New York

Sole Selling Agent for
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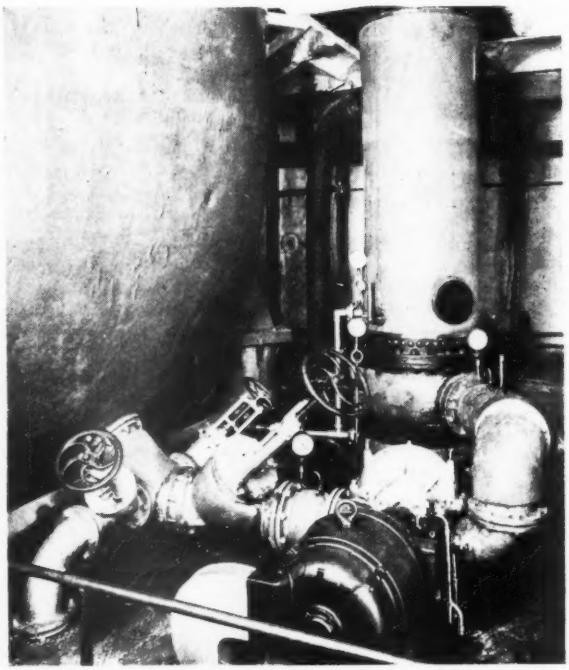
JENSSEN-BROBECK SULPHITE SYSTEM



The Outside Heating and Circulating System that is Revolutionizing Sulphite Cooking

PATENTED IN ALL PULP MAKING COUNTRIES AND IS NOW BEING INTRODUCED INTO AMERICA ONLY AFTER THE SYSTEM HAS PROVED TO BE COMMERCIALLY SUCCESSFUL IN EUROPE.

69 Installations

In Less Than One Year

G. D. JENSSEN COMPANY

4005 Chrysler Building, New York
1017 White Building, Seattle

Pride of Craftsmanship

The Pride of Craftsmanship is reflected in **TENAX FELTS.** Each step in the manufacture of a **TENAX FELT** is a direct image of the craftsmen who make them.

This craftsmanship is reflected in FINISH and SERVICE to you. **TENAX** FIRST, LAST AND ALWAYS.

LOCKPORT FELT COMPANY

NEWFANE, NEW YORK

A New Giant Elwell-Parker

Here is Elwell-Parker's heaviest duty, tilting, fork type truck. Rugged tires, larger bearings, more powerful motors — every part is built to meet the demands of unusual service in handling loads beyond the wheel base with or without skids.

Can be fitted with telescoping uprights, crane and various load-handling accessories, which give the truck practically universal application. Write the nearest Elwell-Parker representative for complete details and learn how Elwell-Parker is anticipating industrial truck requirements years ahead.

The Elwell·Parker Electric Co.

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Telephone, SUtter 1476
Also Los Angeles

Stocks on Pacific Coast

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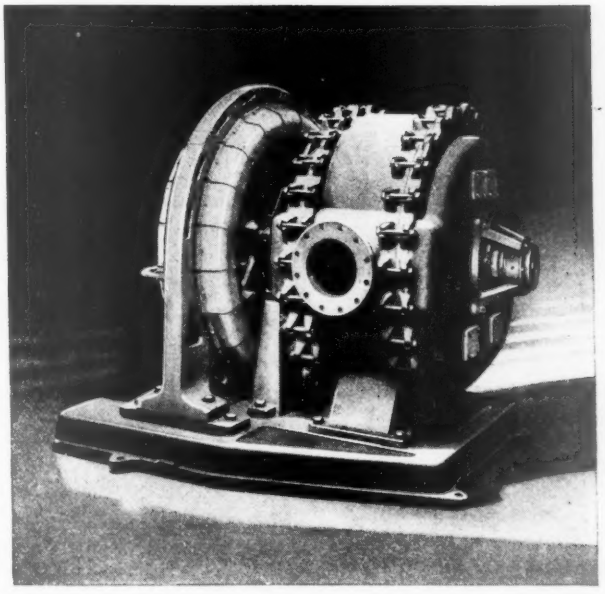
SHIP ON SKIDS

SEATTLE
Colby Steel & Engineering Co.
456 Central Building
Telephone, Elliot 5722
Also Portland

24 HYTORS

. . . at Grand Falls Mill of Anglo-Newfoundland



PRACTICALLY every important paper mill in the United States and Canada relies on Nash Hytor Vacuum Pumps to maintain the required suction on flat boxes and suction rolls.

The Grand Falls Mill of the Anglo-Newfoundland Development Company is a typical example.

Here, twenty No. 7 and four No. 8 Nash Hytors are installed.

Nash Hytor Vacuum Pumps are furnished in capacities up to and exceeding 5,000 cu. ft. per min. of air. For vacuums up to 26 inches of mercury.

NASH ENGINEERING CO., 168 WILSON ROAD, SOUTH NORWALK, CONN.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS

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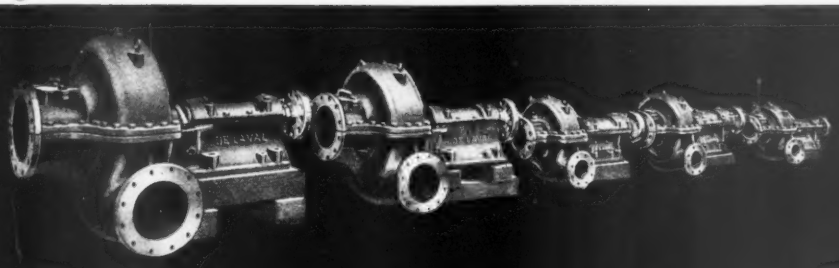


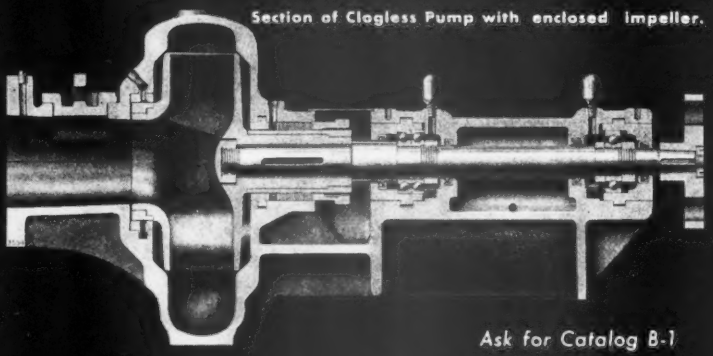
A group of Clogless Pumps in the De Laval Test Room.

De Laval Clogless Pumps

are characterized by:

1. Heavy, substantial construction;
2. Parts subject to wear readily renewable;
3. Pressure water seals at all running joints;
4. Interior quickly accessible;
5. Large, open and direct passages; of correct hydraulic design;
6. Stiff shaft with short overhang and high grade ball bearings spaced well apart.

Section of Clogless Pump with enclosed impeller.



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De Laval Steam Turbine Co., Trenton, N. J.

3107

SULPHUR *for* SULPHITE

4000 to 5000 Tons
Daily Production

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TEXAS GULF SULPHUR CO.

75 E. 45th Street New York City

Mines: Gulf, Newgulf and Long Point, Texas

HOW VALUE IS ASSURED IN EVERY HAMILTON FELT

And now, to make the wool natural again . . . .

After the felt is completed — fulled, dried, stretched, and napped — it is almost bone dry. Yet wool is very hygroscopic, and at its best when it contains as much moisture as the atmosphere.

The illustration shows a section of the Conditioning Room, which Shuler & Benninghofen use to bring the moisture content of the felt up to that of the atmosphere quickly. The whirling disc above the door is the heart of the system. It is the Humidifier, which sprays moisture into the room constantly.

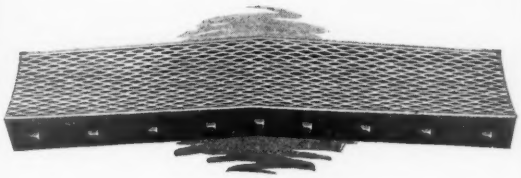
A few hours in this room and the wool in the felt becomes itself again — stronger, more flexible, and better. In this Conditioning Room also, the felt is given its final inspection.

Try one Hamilton Felt. You'll soon be specifying Hamilton Felts regularly and using them on all your machines.

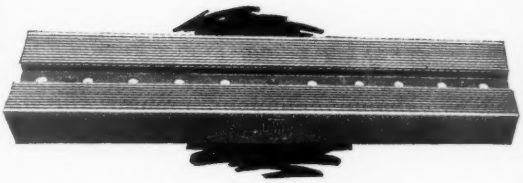
Shuler & Benninghofen, Hamilton, Ohio
Miami Woolen Mills, *Established 1858*

Hamilton Felts

S W W
BED PLATES
and beater bars



Diamond Plate



Open Center Plate

The diamond bed plate for better hydration without shortening the fibers.

The open center bed plate—also for speed—and to reduce the danger of burning.

It is more than likely that you are already using SWW bed plates and beater bars. If, however, you are not using this particular make, a word with superintendents who do use them, or a trial order, will convince you.

Paper trimming knives, chipper knives; also the well known line of DAYTON grinding wheels to keep your tools in condition.

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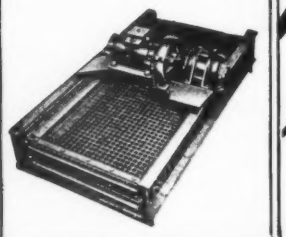
SIMONDS WORDEN WHITE CO.
Main Office
DAYTON, OHIO
Factories at DAYTON BUFFALO CLEVELAND BELOIT

THE



Leahy

PROFITS

Screening Wood Chips

Your operating profits are in proportion to the efficiency of your producing equipment. Repairs on screening equipment can swing you to profit or loss.

Careful records of Leahy Screen operating costs as maintained by two large mills in the Northwest over a years' time demonstrated that screening costs outside of power, amounted to approximately ½ cent per unit of good clean chips.

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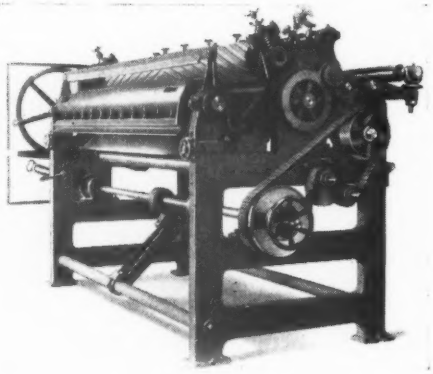

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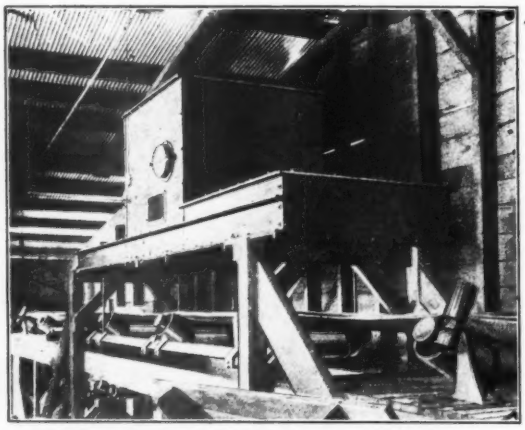
CUTTER KNIVES and SLITTERS

Hamblet Machine Co.

LAWRENCE, MASS.

Weighing in Motion Saves Losses



Typical Installation Merrick Conveyor Weightometer

The MERRICK CONVEYOR WEIGHTOMETER weighs and registers the weight automatically and continuously of any conveyor-handled material.

Many are in use in paper mills weighing coal as received — coal and hogged fuel to bunkers or storage — wood chips to digesters, as well as laps and slushed paper stock.

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MERRICK SCALE MFG. CO.

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Northwestern Representative—IRVING R. GARD & CO., 1117 East Pike St., Seattle, Washington.
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Edison STORAGE Battery

THIS ONE REASON for the Great Majority of Pulp and Paper Mills Everywhere Using Edison Batteries . . .

SUPERIOR QUALITY!

The **Edison**

STEEL ALKALINE STORAGE BATTERY

Edison Storage Battery Co.

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There is only one sure way to eliminate dirt which has its source in sand and scale from concrete and steel tanks—let Stebbins line them.

SEMCO Bonded Linings for:
MACHINE CHESTS
STOCK CHESTS
SLUSH TANKS
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Every Stebbins Lining carries a Bonded Guarantee

STEBBINS Engineering & Manufacturing Company

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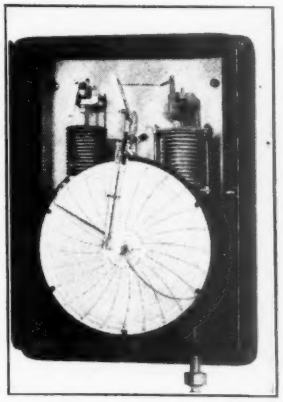
BRISTOL *announces the...*

Recording Absolute Pressure Gauge



OFTEN where a vacuum gauge is used the measurement really desired is not vacuum but absolute pressure. Before the development of BRISTOL'S Recording Absolute Pressure Gauge, absolute pressure generally was computed by subtracting from the barometric pressure the vacuum which the gauge indicated. Two observations, barometric pressure and vacuum, were always needed before absolute pressure itself could be determined. Now BRISTOL presents to industry a new Recording Absolute Pressure Gauge that gives an accurate continuous 24-hour record of absolute pressure, automatically compensated for barometer fluctuations.

You will want further information about this new achievement in precision pressure measurement. We shall gladly send you facts and figures.

TRADE MARK
BRISTOL'S
REG. U.S. PAT. OFF.

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Waterbury, Conn.
Branch offices at Los Angeles and San Francisco

INSTRUMENTS FOR INDICATING RECORDING CONTROLLING SINCE 1889

SKF

The mark of a world-wide organization manufacturing anti-friction bearings to the highest standards of quality.

2699

SKF Industries of California, Inc.

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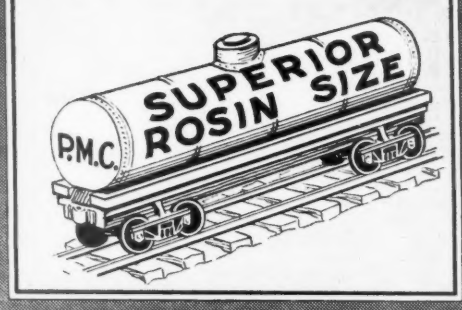


PAPER MAKERS CHEMICAL CORP.

PORTLAND, ORE.

H. WATERBURY & SONS CO.

ORISKANY, N. Y.

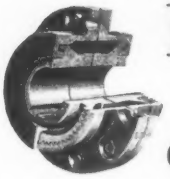
* *

Manufacturers of —

PAPER MAKERS' FELTS

* *

For All Grades of Pulp and Paper



FAST'S

Self-Aligning

COUPLING

FAST'S Coupling (of purely mechanical flexibility) does away with coupling repairs on intake shafts and provides a simple and direct method for Jordan adjustment. There are no lacings, bushings, pins, springs, discs, grids or any other flexible members to fatigue and fail.

Write for New Book

Fast's new 10th Anniversary Catalog is just off the press. Send for a free bound copy today.

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Freeport Sulphur Company

The Chanin Bldg., New York City
122 East 42nd Street

Mines—
Freeport, Brazoria County, Texas

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Balfour, Guthrie & Company

Seattle, Tacoma, Portland
San Francisco, Los Angeles and
Vancouver, B. C.

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Put a Strong Light under this Eastwood Seam

What would a strong light show if you put it under the patented seam used on all Eastwood "Perfection" Fourdrinier Wires?

This is what you'll find:—The patented Eastwood seam has very nearly the same suction area as the body of the wire. As you know, that makes for better operation when running on the Fourdrinier machine.

This patented seam is now standard on all our Fourdrinier wires, from those for 10 lb. tissue up to high speed newsprint.

EASTWOOD CORPORATION

Established 1877 Belleville, N. J.

"American Paper Made on American Wires"

Pacific Coast Sales Agents:
PACIFIC COAST SUPPLY COMPANY
San Francisco — Portland — Seattle

EASTWOOD

"Perfection" WIRES
"Perfection" VALVES

Pacific Coast Supply Company

Representing the Foremost Manufacturers of Supplies—

F. C. Huyck & Sons—
Woolen Felts and Jackets.

Texas Gulf Sulphur Company—Sulphur.

Walker Cut Stone Company—Pulp Stones.

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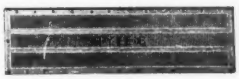
Union Screen Plate Company

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE

SCREEN PLATES FOR FLAT SCREENS
6 SLOTS—5 SLOTS—4½ SLOTS—4 SLOTS—PER INCH



OLD PLATES RECLOSED AND RE-CUT TO ACCURATE GAUGE

ROLLED PHOSPHOR BRONZE AND COPPER PLATES FOR ROTARY SCREENS

Sole Manufacturers of the Union-Witham Screen Plate Vat and Fastener

Pacific Coast Sales Agents: PACIFIC COAST SUPPLY CO.
San Francisco Portland Seattle

COTTON DRYER FELTS

Standard Weave
4/0-6/0-8/0

Widths 70″ to 262″

Three Ply Weave
43, 46, 49 oz.

Duplex and Multiple Weaves also Made if Wanted

CALIFORNIA COTTON MILLS COMPANY

OAKLAND, CALIFORNIA

For Prices for 1931 Deliveries Write to the

PACIFIC COAST SUPPLY CO.—Exclusive Agents—San Francisco—Portland—Seattle
343 Sansome Street 909 Lewis Building 1126 Smith Tower

Price 21/- Net Sterling; or Post Free 23/-. Demy 8vo. Cloth Bound, over 1,050 pp.

The Paper Makers' Directory of All Nations

1931 **1931**

The Red Book of the British Paper Industry **Alphabetically Arranged** **Printed in Clear Type**

CONTENTS INCLUDE:

Paper, Pulp and Board Mills—Names and Addresses of more than 5,000 in 50 different Countries, with (1) Makes of Paper; (2) Number and width of Machines; (3) Tonnage Output; (4) Power Used; (5) Telegraphic Addresses; (6) Agents, etc. Mill Productions classified in One List, alphabetically arranged according to Goods and Country (under 400 trade designations). Special Buyers' Guide. Paper Agents and Mill Representatives (with Mills Represented).

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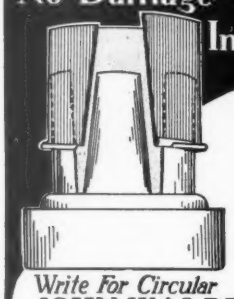

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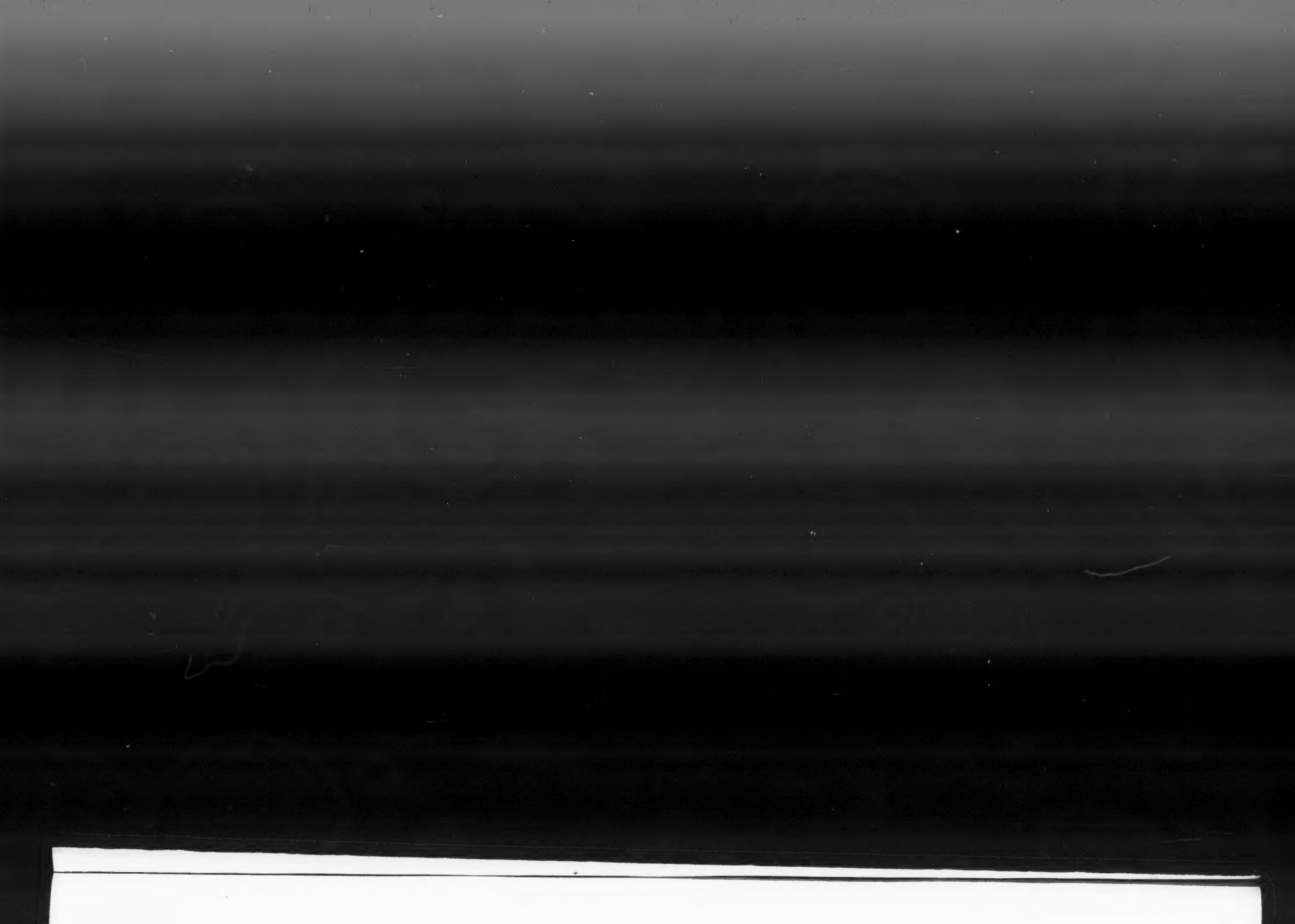

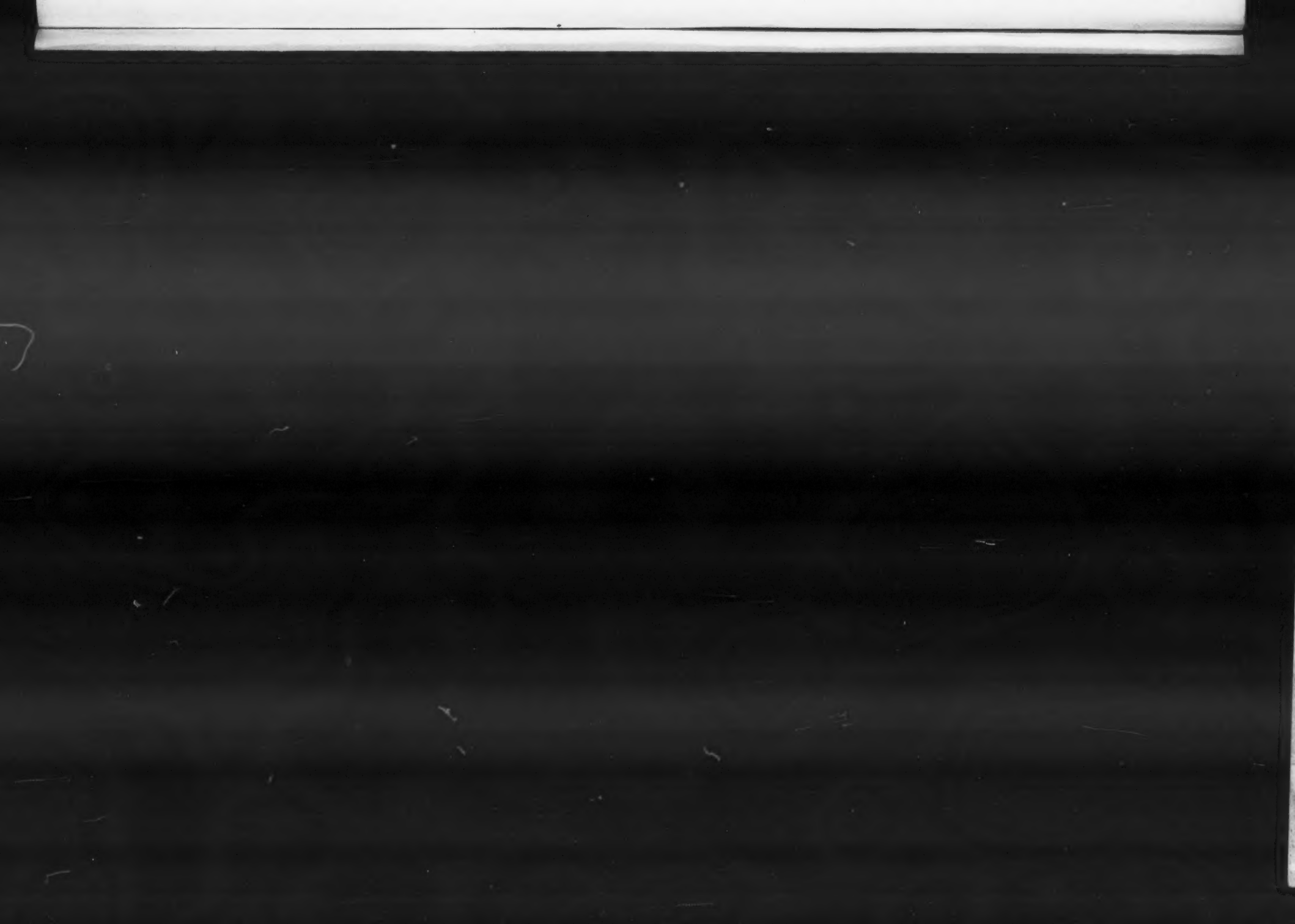

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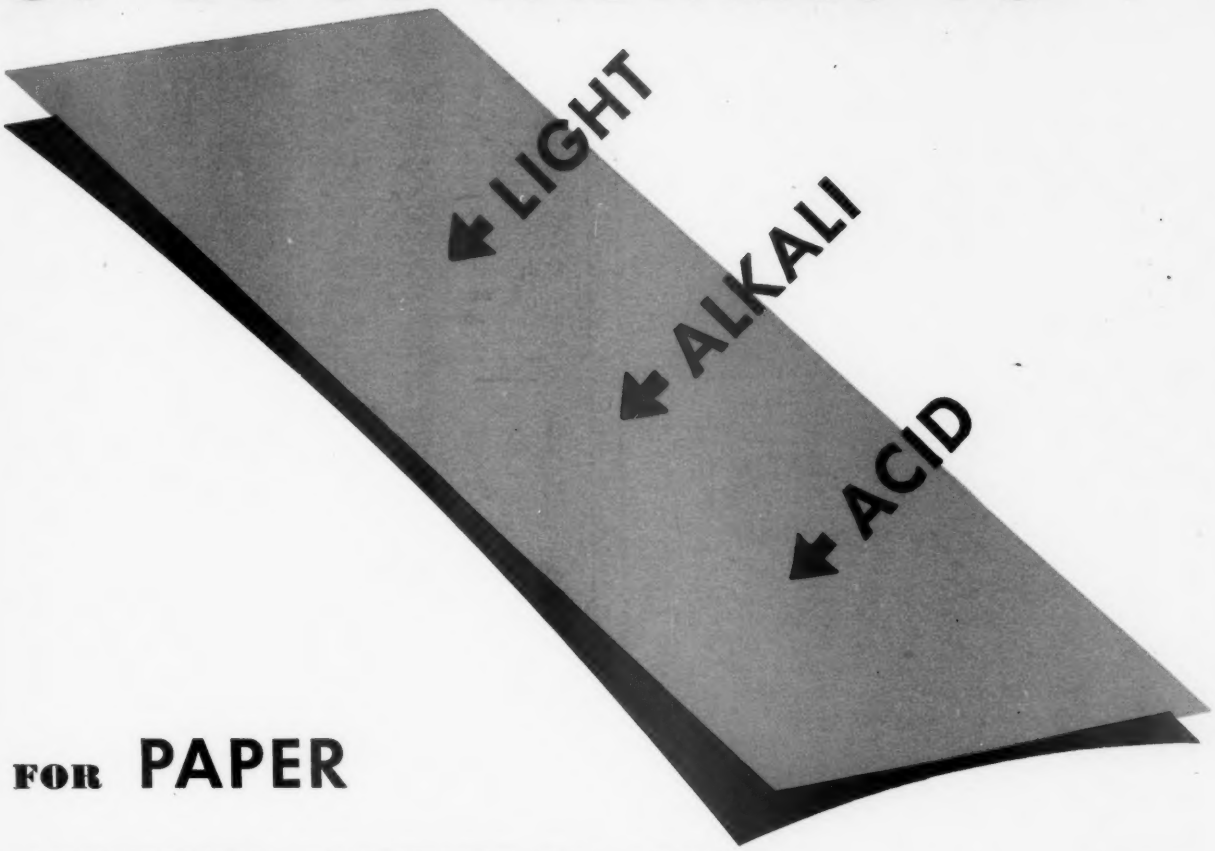

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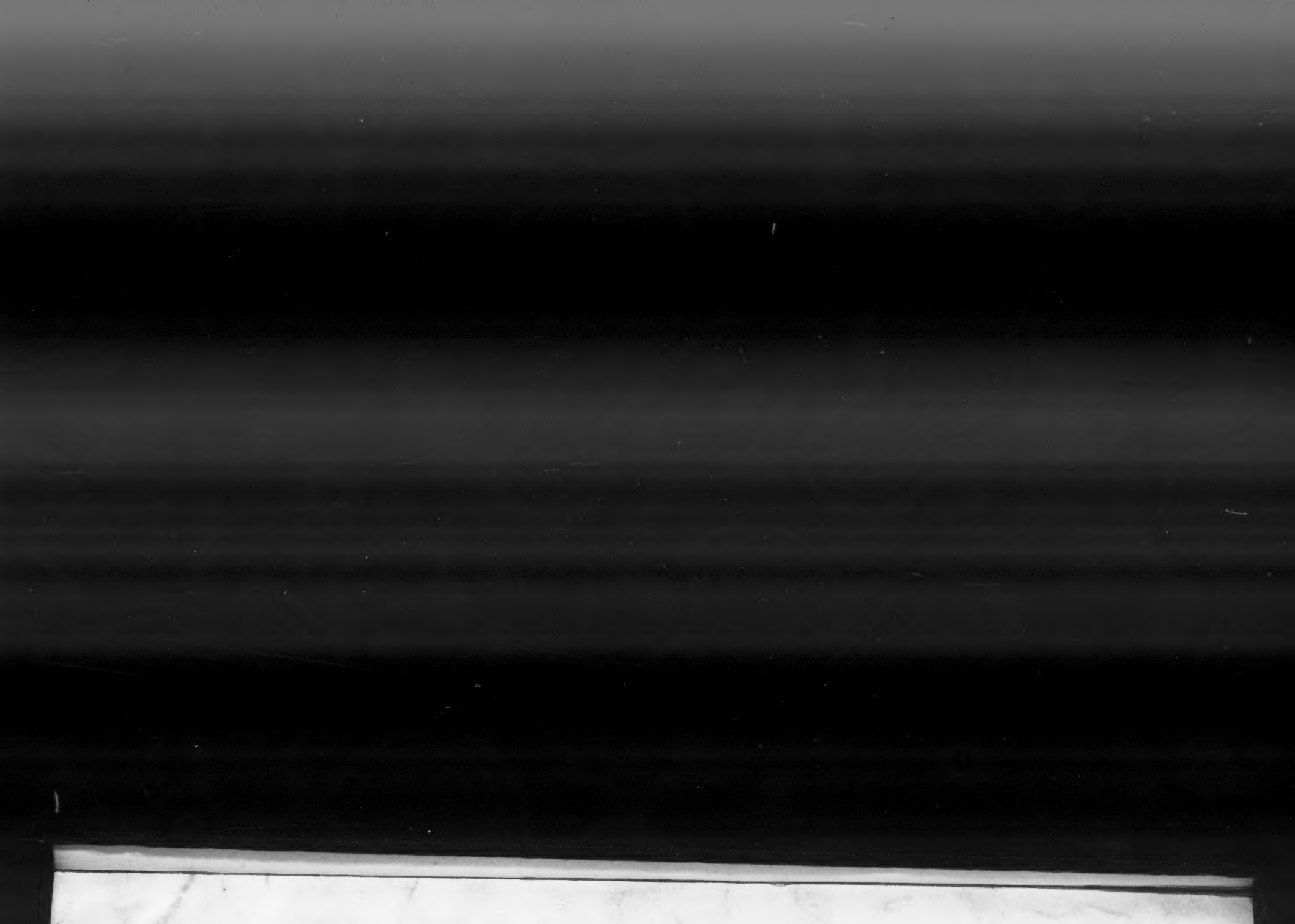
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